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**The relationship between affective word ratings and lexico-semantic properties
in Traditional and Simplified Chinese**

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Abstract

Citron, Weekes, and Ferstl (2010) reported that affective features, namely arousal and valence, represented different dimensions in emotion word recognition. The present study is the first to investigate the interactions between lexico-semantic and affective features in the processing of Chinese characters. Fifty three Cantonese speakers and 26 Mandarin speakers participated in the study by providing subjective ratings on 297 words according to lexico-semantic features and affective features in an online questionnaire. Significant differences in the recognition of lexico-semantic and affective features were observed between the two language groups. Arousal and valence showed perfect correlation in Cantonese speakers but not Mandarin speakers. The findings suggested that differences in language, sociolinguistic and cultural backgrounds are likely to influence the recognition of lexico-semantic and affective features of words, and the patterns of interaction between arousal and valence may differ across language groups.

The relationship between affective word ratings and lexico-semantic properties in Traditional and Simplified Chinese

Emotion word processing can be measured using a two-dimensional structure of affect, comprising independent components called emotional valence and arousal. Valence describes the extent to which an emotion is positive or negative, whereas arousal refers to the intensity of an emotion, i.e. how exciting, agitating or calming an emotion word concept is perceived (Feldman Barret, & Russel, as cited in Citron, Weekes, & Ferstl, 2010). The aim of the present study is to test the veracity of this two-dimensional structure in the emotion word processing of Chinese words.

A review of studies of emotion word processing revealed at least two views on the relationship between arousal and valence. Some research suggested that there was an interaction between arousal and valence (Kissler, Herbert, Peyk, & Junghofer, 2007), while other research provided evidence for the independence and distinctiveness between arousal and valence, supporting a double dissociation between emotional valence and arousal in brain activation during word processing (Lewis, Critchley, Rotshtein, & Dolan, 2007). Studies reporting an interaction between emotional arousal and valence indicated a high but not perfect correlation between emotional valence and arousal. This suggested that these two features represented different but related dimensions in affective word processing, showing that studies that manipulate either feature must control for the differences in the other (Citron et al., 2010).

Relationship among lexico-semantic properties in word recognition

Lexico-semantic features of single words, including word age-of-acquisition (AoA), concreteness, familiarity, frequency, imageability, and word length were all known to be important factors in predicting word naming and lexical decision latencies in English and

Chinese word recognition (Balota, Cortese, Sergent-Marshall, Spieler, & Yap as cited in Citron et al., 2010; Liu, Hao, Shu, Tan, & Weekes, 2008; Weekes, Shu, Hao, Liu, & Tan, 2007; Law, Yeung, Wong, & Chiu, 2005). However, AoA, familiarity and frequency of use were also reported to be highly correlated, suggesting that familiar words were also frequently used and acquired early (Bird, Franklin, & Howard; Stadthagen-Gonzales & Davis as cited in Citron, et al., 2010). Similarly, shorter words measured by length in syllables and phonemes were more familiar, more imageable, acquired earlier and more frequently used than longer words in English (Citron et al., 2010).

Relationship between emotion and lexico-semantic properties in word recognition

Emotional content also has an effect on word recognition. Compared to neutral words, emotionally valenced words showed different patterns of processing in single word recognition across a range of cognitive tasks including lexical decision, valence judgment, silent reading, emotional Stroop task and self-referential judgment (Estes & Verges; Kanske & Kotz; Kisler, Herbert, Peyk, & Unghofer; Larsen, Mercer, & Balota; Scott, O'Donnel, Leuthold, & Sereno, as cited in Citron et al., 2010; Lewis, Critchley, Rotshtein, & Dolan, 2007; Võ, Jacobs, & Conrad, as cited in Citron et al., 2010). Few studies had examined the effects of emotion on single word recognition.

Research investigating the relationship between lexico-semantic features and affective features revealed that affective features do not show strong correlations with all lexico-semantic features. A high correlation was seen between rated word imageability and affective features (Citron et al., 2010). It had been hypothesized that high arousal words were likely to be associated with intense life experience, which caused the likelihood of forming a mental image when an individual encountered a valenced word (positive or negative) that was high in arousal (Citron et al., 2010). Previous research also revealed a significant

correlation between familiarity and emotional valence, indicating that positive words were more likely to be perceived as more familiar. However, the results were likely to be accounted for by a response bias due to the participants' reluctance in associating themselves with negative words (Citron et al., 2010).

A review of extant studies of effects of emotion features on word recognition suggested that highly negative words are more arousing than highly positive words (Citron et al., 2010). This was accounted for by the threatening nature of negative stimuli, which created faster responses initiated by the urge of avoidance (Robinson, Storbeck, & Kirkeby, as cited in Citron et al., 2010). On the contrary, positive stimuli were likely to be perceived as safe and secure (Citron et al., 2010) and thus did not generate equally intense arousal. Despite a high correlation between emotional valence and arousal, there were also differences in the absolute intensity of arousal associated with negative and positive words.

Research on word processing in Cantonese and Mandarin speakers

Recent research on the lexical and semantic features of emotion words in English showed that the lexico-semantic properties of emotion words could be dissociated from emotional arousal and valence. This suggested that affective features alone might explain additional variance in word recognition in English (Citron et al., 2010). Previous findings showed great similarities in the relationship between lexico-semantic and affective features in English and German. Despite the research in languages with alphabetic scripts (English and German) with regard to the effects of lexico-semantic and emotional features, the relationship between lexico-semantic and emotion features and the effect of emotion properties on word processing in Chinese are yet to be investigated.

The Chinese reading and writing system is a logographic system that maps orthography and phonology in a relatively unpredictable manner compared to alphabetic scripts. Chinese

characters are made up of spatial arrangement of strokes, forming “radicals”. Chinese characters can be simple or compound characters, with compound characters being those consisting a semantic radical, which carries information about meaning; and a phonetic radical, which provides information on pronunciation (Hoosain, as cited in Shu, 2003). The sublexical processing of these radicals plays an important role in character and word recognition in Chinese (Tsang, & Chen, as cited in Zhou, Ye, Cheung, & Chen, 2009). A character is considered regular when the phonetic radical provides reliable information on a character’s pronunciation and is considered semantically transparent when the semantic radical reflects the conceptual category of the character (Shu, 2003). Both phonetic and semantic radical transparencies may therefore be taken into account in Chinese word processing.

Research on lexico-semantic processing of Chinese characters showed that imageability ratings were a reliable predictor of AoA in Chinese for both nouns and verbs (Ma, Golinkoff, Hirsh-Pasek, McDonough, & Tardif, 2009). Frequency effects in Chinese character processing had been reported in many studies. Previous studies on brain imagery showed that processing of low and high frequency characters invoked different regions of the brain, indicating that reading low frequency characters might create higher demands on retrieval, formulation and coordination of phonological output (Huo, Yeh, Lee, Wu, Chou, Ho, Hung, Tzeng, & Hsieh, 2003). AoA effects in Chinese character processing had been reported (Law, Wong, Yeung, & Weekes, 2008), indicating that AoA was a significant predictor of accuracy in oral reading in Chinese. Studies also reported that the brain regions activated for recognition of late-acquired Chinese characters are spatially distinctive (Weekes, Chan, & Tan, 2008). However, the impact of affective features on Chinese single word processing and correlations with other lexico-semantic properties in Chinese single word processing remained ambiguous.

Purpose of current study

The current study was motivated by the extensive findings on correlations between lexico-semantic features and affective features in English word processing, as well as the limited studies in Chinese, which comprises a different language system compared to English. The primary aim was to investigate whether affective features contribute to word processing in Chinese by examining two different dialects: Cantonese and Mandarin. These two dialects used two contrasting scripts: Traditional Chinese in Cantonese and Simplified Chinese in Mandarin. A secondary aim was to generate a corpus of Chinese words suitable for exploring (i) the correlation among lexico-semantic features in Cantonese and Mandarin, (ii) the correlation between emotional arousal and valence in the two Chinese dialects, and (iii) how affective features correlated with lexico-semantic features in the two Chinese dialects.

Given the results observed in prior studies of the interaction between lexico-semantic features, arousal and valence in English and German words (Citron et al., 2020; Vo et al., as cited in Citron et al., 2010), it was hypothesized that the current study would find a different pattern of correlations between emotional arousal and valence with the lexico-semantic features in Chinese. This might suggest that the lexico-semantic properties of logographic systems (Chinese) have a different impact on word processing compared to alphabetic scripts (English and German).

It was also hypothesized that, similar to the results from Citron et al. (2010), affective features and lexico-semantic features in Cantonese and Mandarin would show a relatively weak correlation, suggesting that (i) emotion imposes an additional independent constraint on Chinese word processing and (ii) that both lexico-semantic features and affective features should be considered when investigating word recognition in Chinese. Furthermore, it was hypothesized that the current study would reveal distinctiveness between arousal and valence,

indicating that emotional arousal and valence are independent of each other across different language systems.

Method

Participants

The Cantonese speaking Group. Fifty three native Cantonese-speaking adults (30 females, 23 males) who primarily read Traditional Chinese participated. They had an education level of at least Form 5 or above. Their ages ranged from 18 to 60 years. They participated in this study on a voluntary basis.

The Mandarin speaking Group. Twenty six native Mandarin-speaking adults (16 females, 10 males) who primarily read Simplified Chinese participated. They had an education level of an undergraduate degree or above. Their ages ranged from 18 to 54 years. They participated in this study on a voluntary basis.

Materials

Word selection and the corpus. Two identical word corpora that comprised a total of 297 words were constructed in Traditional and Simplified Chinese. Each corpus consisted of 180 words that were directly translated from the Sussex Affective Word List (SAWL) (Citron et al., 2010), 29 words from the Test Battery for Chinese Aphasia (Law, 2007), 71 words from the Chinese Compound Word List (Lau, Leung, & Tse, 2010) and the remaining 17 words were randomly selected by the researcher.

All words were initially categorized as positive, negative or neutral by the researcher and an independent rater who was a final year speech and hearing sciences student, with an agreement of 86.0%. The word corpora used in the rating study comprised 297 emotionally valenced words with 138 nouns, 79 verbs and 80 adjectives, with approximately 1/3 positive, 1/3 neutral and 1/3 neutral.

The questionnaire. Online questionnaires were created using the online survey software

SurveyMonkey. The questionnaire comprised 10 web-pages, with an introduction page, a demographic page, intermission pages and 7 pages for subjective ratings of seven lexico-semantic or emotion features. The seven features included word AoA, frequency of use, familiarity, self-reference, imageability, emotional arousal and emotional valence. A 7-point Likert scale was used for subjective rating of these features. Definitions of these 7 features were provided on each corresponding page in the questionnaire, together with two examples of words at the extreme ends of the 7-point Likert scale. The scales were labeled as follows: The scale for frequency of use, familiarity, imageability, self-reference and emotional arousal were scaled from 1 (the least) to 7 (the most); the AoA scale was labeled using the following age ranges: 0-2, 2-4, 4-6, 6-9, 9-12, 12-16, above 16; the emotional valence was scaled from 1 to 7, with 1 being the most negative and 7 being the most positive and 4 as neutral. An option of “unknown word” (不認識此字) was provided beside the 7-point scale of each stimulus.

Procedure

The URL of the online questionnaire was circulated among both the Cantonese and Mandarin speaking groups. The demographic information was collected via the questionnaire. Three hundred and thirty words were presented for subjective ratings of the seven features, with 297 words from the corpus and 33 randomly selected repeated words (around 11%) for the purpose of intra-rater reliability analyses. Participants were required to read through the instructions on each page prior to performing the task. (Appendix A) The order of the rating pages (one feature per page) and the order of the word stimuli within each rating task were varied for each participant. The rating task was self-paced. The participants were advised to take time out in between rating each feature and to complete the entire questionnaire within two weeks. The online questionnaire took approximately two hours for each participant.

Data Analysis

Means and standard deviations of ratings were calculated for word AoA, frequency of use, familiarity, imageability, self-reference, emotional arousal and valence for each word. A categorical variable “valence category” was created to determine whether the words were rated as positive, neutral or negative based on the following criteria: Following Citron et al. (2010), means of valence ratings between 4.71 to 7.00 were categorized as positive words; ratings between 3.30 to 4.70 were categorized as neutral words; and ratings between 1.00 to 3.29 were categorized as negative. The syllable length of each word that ranged between 1 to 4 syllables was classified for consideration in the analyses. A semantic transparency rating was made by the researcher, with reference to the definition of transparent, semi-transparent and opaque characters in previous studies (Shu, 2003; Chen & Weekes, 2004). (Appendix B)

Results

Correlation analyses were carried out between the Cantonese and Mandarin corpora and the ratings from the Sussex Affective Word List in English (Citron et al., 2010) based on the same subsets of words where available. Independent *t*-tests were carried out to compare the means of the subjective ratings for all features in Traditional Chinese and Simplified Chinese.

Multiple linear regression methods were also used to analyze the results in order to assess the lexico-semantic features that predicted emotional valence and emotional arousal ratings. There were two dependent variables in these analyses: emotional arousal and emotional valence. The independent variables in these analyses include the following features: AoA, frequency of use, familiarity, imageability, self-reference, lexical class and semantic transparency. Identical procedures were carried out for both experimental groups.

Descriptive Statistics

The descriptive statistics of rated and objective features, including AoA, frequency of use, familiarity, self-referential rating, imageability, emotional arousal, syllable length of word, and semantic transparency for the three valence categories (positive, neutral and negative) were obtained from the Cantonese and Mandarin group (Appendix C and D). The means and standard deviations of the list of all word items and their associated variables are provided in Appendix E.

Comparison of valence categories in Traditional Chinese and Simplified Chinese

In the Cantonese speaking group, 30 words out of the 297 word stimuli were rated as positive, 257 words were rated as neutral, and 10 words were rated as negative. (Appendix C) In the Mandarin speaking group, 56 words out of the 297 word stimuli were rated as positive, 156 words were rated as neutral and 85 words were rated as negative. (Appendix D)

Reliability analyses

The Test Battery for Chinese Aphasia (Law, 2007) contained imageability ratings for approximately 10% (29 word items) of the 297 words in the corpus used in this study. Pearson correlations between the ratings for the Test Battery (Law, 2007) and the present ratings were positive but weak ($r = 0.48, p < 0.01$).

Intra-rater reliability on ratings of semantic transparency based on definitions from previous studies (Shu, 2003; Chen & Weekes, 2004) was 88.8% between the researcher and the second rater who was a final year speech and hearing sciences student.

Approximately 10% of the word stimuli were randomly selected and subjected to an intra-rater reliability check of each rated feature in both Cantonese and Mandarin groups. Correlation analyses were carried out to compare ratings of the first and second rating of each

word item rated by each participant. The percentages of intra-rater reliability from the Cantonese and Mandarin groups on all rated features were all above 70% except for the ratings on emotional valence in the Mandarin group (Appendix F).

Subjective ratings in the Cantonese group and the Mandarin group

Table 1 shows the results of the independent samples *t*-tests that compared the means of all rated features for the Cantonese and Mandarin groups. Significant differences of means between the two groups were found in all rated features.

Table 1

Overview of the differences between means of all rated features in the Cantonese speaking and Mandarin speaking groups

Comparison	Features	Independent samples <i>t</i> -test	
		<i>t</i>	df
Cantonese speaking group vs. Mandarin speaking group	AoA	-2.78**	592
	Frequency of use	-3.62***	592
	Familiarity	9.61***	592
	Self-referential rating	7.12***	592
	Imageability	9.23***	592
	Emotional arousal	13.74***	592
	Emotional valence	3.39**	592

Note: * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

Correlation among lexico-semantic features

Correlations between all lexico-semantic and affective features of the Cantonese and Mandarin groups are presented in Figure 1a and 1b respectively. In the Cantonese group, self-referential rating and imageability were highly correlated. In the Mandarin group,

self-referential ratings, frequency and familiarity showed a strong positive correlation.

Correlation between affective and lexico-semantic features

Results revealed that the self-referential ratings and imageability ratings significantly predicted emotional arousal in Cantonese word processing ($p < 0.001$). Results from stepwise regression with the significant predictor variables of emotional arousal in Cantonese are presented in Table 2. Self-referential rating and imageability ratings significantly predicted emotional valence in Cantonese word processing ($p < 0.001$). Results from stepwise regression with the significant predictor variables of emotional valence ratings in Cantonese are presented in Table 3. The regression results revealed that self-referential rating and syllable length significantly predicted emotional arousal in Mandarin word processing ($p < 0.001$). The stepwise regression results of the predictor variables of emotional arousal in Mandarin are presented in Table 4. Self-referential rating, frequency of use and imageability significantly predicted emotional valence in Mandarin word processing ($p < 0.001$). The stepwise regression results of the predictor variables in Mandarin are presented in Table 5.

Correlation among affective features

The correlation between emotional arousal and valence in the Cantonese group and the Mandarin group are presented in Figures 2a and 2b respectively. A positive correlation between emotional arousal and valence was shown in the graph resulting from the ratings of the Cantonese group, indicating that positively valenced words were higher in emotional arousal compared to negatively valenced words. By contrast, a U-shaped function could be seen in the graph representing ratings of the Mandarin group, which indicated that both positively and negatively valenced words were rated as higher in emotional arousal when compared to neutral words (Bradley & Lang, as cited in Citron et al., 2010).

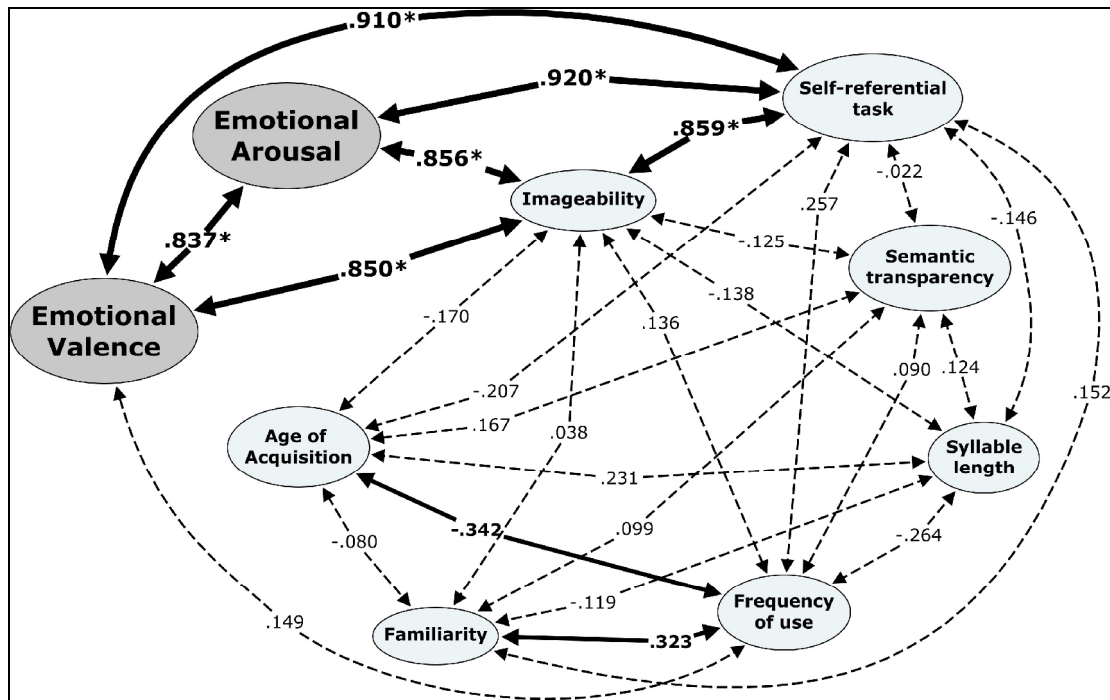


Figure 1a. Pearson correlations among affective, lexical and semantic features ($p < 0.001$, significance denoted by* and thickness of arrows) in Cantonese.

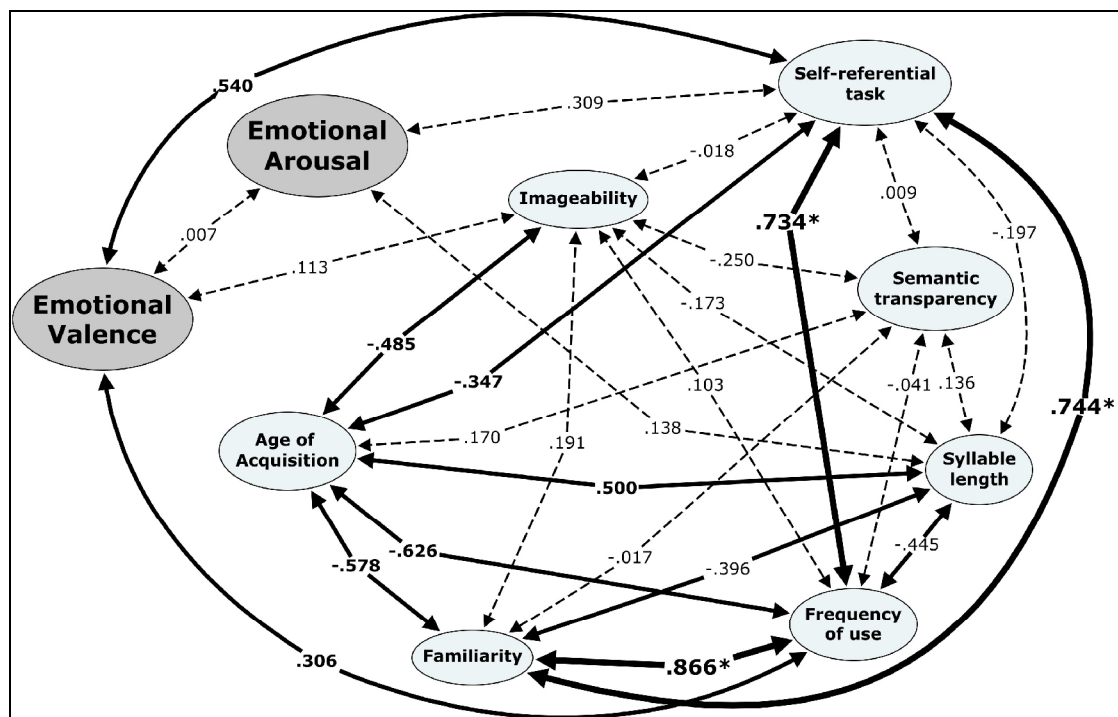


Figure 1b. Pearson correlations among affective, lexical and semantic features ($p < 0.001$, significance denoted by* and thickness of arrows) in Mandarin.

Table 2

Regression results for predictor variables of emotional arousal in Cantonese

Variables	Adjusted R square	t	Standardized Coefficients β
Self-referential rating	.845	40.209***	.920
Imageability	.861	5.963***	.252
Frequency	.864	-2.399*	-.054

Note: * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

Table 3

Stepwise regression results for predictor variables of valence in Cantonese

Variable	Adjusted R square	t	Standardized Coefficients β
Self-referential rating	.828	37.74***	.910
Imageability	.845	5.789***	.259
Frequency	.849	-.070**	-.070

Note: * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

Table 4

Regression results for predictor variables of emotional arousal in Mandarin

Variables	Adjusted R square	t	Standardized Coefficients β
Self-referential rating	.092	5.577***	.309
Syllable length	.131	3.739***	.207
Imageability	.147	-2.589*	-.141

Note: * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

Table 5

Regression results for predictor variables of valence in Mandarin

Variables	Adjusted R square	t	Standardized Coefficients β
Self-referential rating	.289	11.025***	.540
Frequency of use	.305	-2.769***	-.198
Imageability	.325	3.092**	.150

Note: * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

Correlation between the ratings by the Chinese groups and the English groups

The correlation between the Cantonese ratings, Mandarin ratings and the English ratings of AoA, familiarity, imageability, and emotional arousal from Citron et al. (2010) are presented in Appendix G. The correlations between Mandarin and English ratings are comparatively similar than that between the Cantonese and English ratings.

Summary of All Findings

The results obtained from the Cantonese and Mandarin groups were significantly different from each other in all rated features. In the analysis of relationship between lexico-semantic and affective features, perception of self-reference was the only common predictor of perception of emotional arousal and valence that was found for both groups. Different patterns of predictors for arousal and valence were also found between the groups. The U-shaped curve identified by Citron et al (2010) in English, showing the independence between emotional arousal and valence was found in the Mandarin group but not the Cantonese group. In addition, the correlations between Mandarin and English word ratings were higher and more comparable than that between Cantonese and English word ratings.

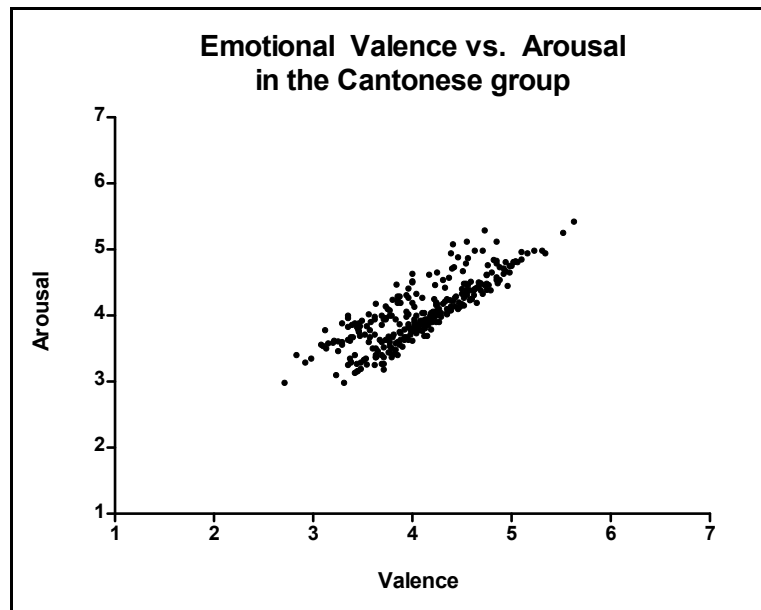


Figure 2a. Valence ratings plotted with arousal ratings in the Cantonese group

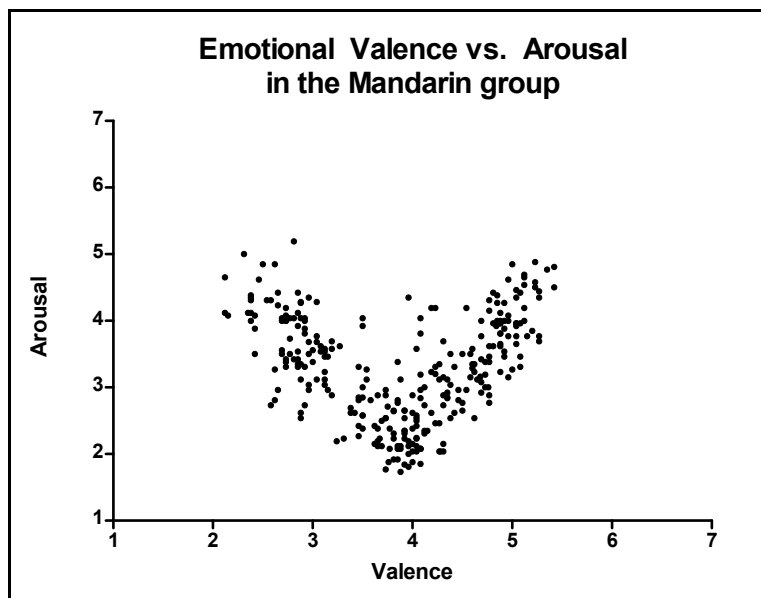


Figure 2b. Valence ratings plotted with arousal ratings in the Mandarin Group

Discussion

The study explored the effects of affective features on word processing and their relationship with lexico-semantic features in two different dialects in Chinese. The results of

the study supported the hypothesis that emotional arousal and valence show different pattern of correlations with the lexico-semantic features in Chinese when compared to English and German (Citron et al., 2010; Võ, Conrad, Kuchinke, Urton, Hofmann, & Jacobs as cited in Citron et al., 2010). However, the results demonstrated an unexpected difference between the ratings of Cantonese and Mandarin speakers.

The results showed that affective features had relatively weak correlations with most of the lexico-semantic features, supporting the hypothesis that emotion imposes an additional independent constraint on Chinese word processing and therefore models of word recognition in Chinese should consider both lexico-semantic features and affective features. Finally, the results partially supported the hypothesis that emotional arousal and valence were independent of each other in the Chinese language system. This hypothesis was supported by Mandarin speakers and was not supported by the data from Cantonese speakers.

Correlation between lexico-semantic features ratings in Mandarin and Cantonese

A different pattern of correlations among lexico-semantic features was observed in the ratings of the Cantonese group and the Mandarin group. Strong positive correlations between the self-reference and imageability ratings were observed in the Cantonese group, while a strong positive correlation between self-reference, familiarity and frequency ratings were observed in the Mandarin group. The strong correlation between self-reference and imageability could be explained by the generation of mental images of particular words and the increased perception of relevance to the individuals formed by past life experiences (Citron et al., 2010).

The correlations between self-reference, frequency of use and familiarity ratings in the Mandarin group were in line with previous findings (Bird et al. as cited in Citron et al., 2010). This suggested that words that were used more frequently were usually perceived as more

familiar than words that were used less frequently. The correlation between frequency and familiarity in the Cantonese group was relatively much weaker than that of the Mandarin group. This could be explained by the differences in the linguistic background of the two experimental groups. The Cantonese group composed of all native Cantonese speakers, whose spoken language differed from their written language, while the Mandarin group used the same spoken and written language. The Cantonese dialect is usually not presented in the written form of the Cantonese group, leading to a lower correlation between frequency of use and familiarity in their written language since cognitive familiarity ratings were more highly correlated to frequency of spoken language rather than written language (Tanaka-Ishii & Terada, 2011).

Predictor variables of emotional arousal and valence in Cantonese and Mandarin

The results obtained from the subjective ratings of the Cantonese group showed similar patterns regarding predictor variables of affective features compared to previous similar studies (Citron et al., 2010). On the contrary, the Mandarin group showed patterns that were different from the Cantonese group and that from the studies in English and German.

Differences in predictor variables of affective features were observed in the Cantonese group when compared to the Mandarin group. Compared to previous findings reported by Citron et al. (2010) which observed a relationship between imageability and emotional arousal, imageability was found to be a predictor of emotional arousal only in the Cantonese group but not the Mandarin group, whereas syllable length was found to be a predictor of emotional arousal in the Mandarin group but not the Cantonese group. On the other hand, self-referential ratings, frequency of use and imageability were found to be significant predictors of emotional valence in both the Cantonese and Mandarin groups.

Self-referential features and emotional valence. Self-referential ratings predicted both

emotional arousal and emotional valence in both groups. The results indicated that words that were more positive were generally rated as more relevant to the individuals in the research groups. The present finding was compatible with previous observations indicating the relationship between the process of self-relevance and words with positive connotations (Mezulis, Abramson, Hyde, & Hankin, Pahl & Eiser, Alicke, Klotz, Breitenbecher, Yurak, & Vredenburg, as cited in Watson, Ditschel, Jentzsch, & Obonsawin, 2008). This suggested that the process of self-reference and emotional valence were unlikely to be independent of each other. The self-positivity bias may be a possible explanation of the current finding, suggesting that individuals tend not to rate themselves as having negative personalities or behavioural characteristics (Allison, Messick, & Goethals; Messick, Bloom, Blodizar, & Samuelson, as cited in Watson et al., 2008).

Imageability and emotional arousal. Imageability was found to be a predictor variable for emotional arousal in the Cantonese group. The results indicated that words that were more emotionally arousing were generally rated as higher in imageability, meaning that the raters were more likely to generate a mental image of words that were rated as more arousing. This finding was compatible with the findings from Citron et al. (2010), who suggested that the association between intense early life experiences and arousing word stimuli might provoke formation of mental images of the event and the related words. Imageability was found to have less predictive value in emotional arousal in Mandarin speakers when compared to the Cantonese speakers. This might indicate that emotion imposes an additional constraint on Mandarin word processing that is independent from imageability, which is a lexico-semantic feature. Words that were related to raters' life experience were likely to lead to perception of higher arousal (Citron et al., 2010), but might not necessarily provoke mental images due to their abstract nature (Bauer & Altarriba, 2008).

Comparison between emotional arousal and valence correlation across different language groups

Contrasting emotional valence ratings in the two experimental groups. Differences were found in the ratings of emotional valence in the Cantonese group and the Mandarin group. Different patterns of interactions between arousal and valence were also observed between these two groups. Despite the fact that the word list was designed to compose of words with approximately 1/3 (100 words) being positive, 1/3 (98 words) being neutral and 1/3 (99 words) being negative, 257 words and 156 words were rated as neutral in the Cantonese group and the Mandarin group respectively. The results were different from the prediction and the findings of a similar study conducted in English (Citron et al., 2010). Suggesting that the Chinese groups were more likely to rate words as containing little positivity or negativity (neutral) compared to the English speakers. In addition, among the 297 words in the word list, 85 words were rated as negative in the Mandarin group while only 10 words were rated as negative in the Cantonese group. This suggested that the Mandarin group was more likely to rate words as negative when compared to the Cantonese group. These results suggested that different language groups might perceive emotional valence differently at word level.

Interactions of arousal and valence among different language groups. Different patterns of interactions between emotional arousal and valence were observed between the Cantonese group and the Mandarin group. According to the arguments from previous studies (Lewis et al., 2007; Citron et al., 2010), interaction between positive and negative valences and arousal were expected to form a U-shaped curve, which indicates that negative and positive words are more arousing than neutral words. A similar U-shaped curve was seen in the graph of emotional arousal plotted against valence in the Mandarin group, indicating a curvilinear correlation between emotional arousal and valence perceived in language at word

level in the group. The results obtained from the Mandarin group were partially compatible with the English experimental group in Citron et al. (2010), but did not show significant differences in levels of arousal in highly negative words and highly positive words that were presented in the previous English study (Citron et al., 2010).

On the contrary, the ratings of emotional arousal and valence in the Cantonese group formed a linear relationship, indicating that positive words were perceived as more arousing while negative words are less arousing. The results in the Cantonese group showed a contrast with the previous studies that suggested positive valence as generally eliciting lower level arousal than negative valence (Robinson, Storbeck, Meier, & Kirkeby, as cited in Citron et al., 2010). The finding suggested that the perception of arousal might be influenced by the linguistic and cultural differences between the Cantonese and Mandarin groups.

Overall differences among language groups: Cantonese, Mandarin and English

The overall differences observed in the results from the Cantonese group and the Mandarin group suggested that Cantonese-speaking individuals who were raised in Hong Kong and Mandarin-speaking individuals who were raised in Mainland China had imposed variance in subjective ratings. The results could be due to the differences in their perception of emotions in world concepts across groups. This phenomenon could be explained by the conceptual effects of language suggested by Whorf's theory of linguistic relativity (The Linguistic Relativity Hypothesis), which proposes that one's perception of the world is determined by the language he or she uses (Tohidian, 2009). Since 180 out of the 297 words in the word list were directly translated from the Sussex Affective Word List (SAWL) used in an English study (Citron et al., 2010), ratings of emotional valence and arousal of the same set of words were expected to be different across the Chinese-speaking and English-speaking participants, as their use of language and cultural background might have influenced their

perception of life events. For example, the mean value of arousal of “danger/危險” is 3.69 for the Cantonese group, 4.08 for the Mandarin group and 5.32 for the English group, indicating that the word might be of different degrees of arousal to different groups. These findings suggest caution against use of the same corpus across language groups, as it might be expected that the same word yields different ratings among different language groups. I will refer to this as the Language Relativity Hypothesis, which is supported by the observations found here that the ratings of affective features for single words are highly dependent on the linguistic and cultural background of the rater.

Against the Linguistic Relativity Hypothesis, the results from the correlation analyses indicated some comparability between the Mandarin group ratings and English group ratings in familiarity, imageability and arousal ratings in the 180 words that were directly translated from the Sussex Affective Word List.

The differences in results between the Chinese speaking groups are striking evidences for the Linguistic Relativity Hypothesis and may be explained by the differences between the spoken dialect of the Cantonese group and the spoken languages of the Mandarin group. As discussed earlier, Cantonese is the main spoken language used in daily conversations among the Cantonese group, which differs from the written form of Chinese that is used as the experiment stimuli. Among the 180 words used for comparison among the three language groups, 20 words in Traditional Chinese were regarded as written form Chinese and were not being used in daily spoken conversations. The subjective ratings obtained from the Cantonese group might not have reflected their genuine perception of the word of the spoken dialect that conveyed the same meaning. A possible explanation could be that sociolinguistic background shapes the sensitivity of perception of written Chinese and spoken Cantonese dialect in different ways or degrees of intensity (Snow, 2004). For example, a positive adjective “happy/快樂” had the mean arousal value of 3.73, 4.88 and 4.71 rated by the Cantonese

group, the Mandarin group and the English group respectively; and was rated as “neutral” overall by the Cantonese group but “positive” by both the Mandarin group and the English group. It could be hypothesized that the Cantonese group participants might have perceived “快樂” as less arousing and less positively valenced than “開心” (“happy” in Cantonese dialect). In addition, the regression results also showed that words with longer syllable length were perceived as more arousing in Mandarin speakers when compared to Cantonese speakers. This might also be explained by the differences posed by written and spoken form of Chinese. Since longer words in the wordlist were 4-character Chinese idioms that were also used in the spoken language among Mandarin speakers, they were more likely to yield higher sensitivity of emotional perception among the Mandarin group. Further studies on perception of lexico-semantic and affective features using stimuli of the Cantonese dialect are warranted to evaluate this hypothesis.

Possible modifications of the study

To conclude, this study showed that the perception of emotional arousal and emotional valence of written Chinese texts by the Cantonese speakers and Mandarin speakers might be different due to the differences in their sociolinguistic and cultural backgrounds. The Cantonese speaking group consisted of 53 participants while the Mandarin speaking group only composed of 26 participants. In order to make a more reliable comparison between the two experimental groups, the design of the participant groups could be modified in order to achieve equal or more similar sizes of both experimental groups. Although the differences between the written Chinese and spoken Cantonese dialect might have contributed to the differences between ratings of the Cantonese speaking group and the Mandarin speaking group, written Cantonese was not being used for this study as it was not considered a formal written language in society (Snow, 2008). Furthermore, with Cantonese being a spoken

dialect, it was impossible to control all participants of the Cantonese speaking group to have prior knowledge to the written forms of Cantonese dialects, e.g. “好𩇛” as “精疲力竭” (“exhausted”), “頂唔順” as “吃不消” (“unbearable”), “扮嘢” as “裝模作樣” (“pretentious”). Elimination of the words that could only be used in written Chinese might help to rule out possibilities of reduction in word sensitivity caused by presentation of written language to a Cantonese-speaking group. In addition, more detailed information on participants’ education, occupation, socio-economical and cultural background would have given a more comprehensive picture of how specific differences in the sociolinguistic backgrounds that might have affected participants’ subjective rating of lexico-semantic features and affective features.

Theoretical and clinical significance of the present study

This is the first study to investigate the relationship between lexico-semantic features and affective features in two Chinese dialects. The results suggest that in addition to the lexico-semantic features that are known to predict word recognition in Chinese, it is likely that the affective features of words will have some impact on character recognition. If an effect of arousal or valence or both were found on the recognition of Chinese characters, this would have some implications for theoretical models of reading in Chinese. For example, the model proposed by Weekes, Chen and Gang (1997) assumes two pathways: a semantic route and a non-semantic route for oral reading available for all normal Chinese readers. Given the correlations between the emotion word features and lexico-semantic variables in the present study, it can be predicted that the effects of valence and arousal may emerge in the semantic pathway.

From a clinical perspective, the current study explored the possibility of separating the effects of text contexts from word level in language processing. The words in the corpus

developed in the current study may also be used in further behavioral measures and event-related potentials (ERP) studies on normal participants as well as participants with affective or neuropsychological disorders and hence shed light on clinical development. We know that lexical features such as frequency and AoA have independent effects on brain activation during word recognition in English, German (Fiebach & Friederici as cited in Citron, 2003) and Chinese (Weekes et al., 2008). We also know that emotion word features have an independent effect on word recognition in English and German (Citron et al., 2010; Võ et al. as cited in Citron, 2010). Future studies should test this question in Chinese speakers noting that each dialect may show a different pattern of effects.

Conclusion

In short, the current study supported the hypothesis that the perception of lexico-semantic properties and emotional content of words could be influenced by the sociolinguistic and cultural background among different language groups. It was also suggested that while applying the same word corpus to different language groups in future investigations on event-related potentials (ERP) or fMRI, the subjective ratings of emotional valence should be collected from participants prior to predetermining positivity or negativity of these words. Results of the current study also accommodated with previous research findings which supported the hypothesis of self-positivity bias, suggesting that high self-referential rating was a predictor of positive words. Modifications of the methodology of the current study, including the similar sample sizes of both experimental groups, modification on the word stimuli for the Traditional Chinese group and specific information on sociolinguistic and cultural backgrounds, should lead to a more thorough understanding of the relationship among lexico-semantic features, the sociolinguistic backgrounds and the emotion features in word processing in Traditional and Simplified Chinese.

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APPENDIX A

Online questionnaire instructions and definitions of lexico-semantic and affective features.

稍後你將會用一個七級評分表、以不同的準則和特徵去評價一連串的字詞。整份問卷總共包含七個特徵的評分。這問卷共在七部份。你可以選擇在填寫完每一個部份之後關掉視窗稍作休息。在第二次進入問卷網頁的時候，你只須進入未填的那一頁，然後由那頁開始繼續填寫，直至完成問卷為止。

You will be presented with a list of words and will be asked to rate these words on a 7-point scale for different features. The questionnaire comprises 7 sections. You are recommended to take breaks after performing the rating in each section.

學懂年齡

請填下每一個字的學懂年齡。學懂一個字的意思指即使你不能寫或從書寫文字中讀出那個字，你也能在日常生活交談中明白別人在運用這個字時的意思。例：你可能在小學的時候已學懂「農場」，但在中學時期才學會「盈利」。請選擇你學懂每一個字的年齡層。如果你不懂得那個字，請選擇「不認識此字」一欄。

Age-of-acquisition

Please indicate the age range at which you learned each of the words on the list. “Learning a word” means that you would have understood that word if somebody had used it in front of you and that you are able to use, read or write it in daily life. For example, you have probably learned the word “farm” in elementary school, but the word “profit” in secondary school. If you do not know the meaning of a word, please check the box “Unknown word”.

字詞熟悉程度

請填下每一個字的熟悉程度。熟悉程度是指你日常接觸或聯想到此字的次數。1 為極度陌生，7 為極度熟悉。例：你可能對「成功」一字很熟悉，但對「腳墜」一字相對地十分陌生，那你便應該評「成功」為「7」，評「腳墜」為「1」。如果你不懂得那個字，請選擇「不認識此字」一欄。

[1 為極度陌生, 7 為極度熟悉]

Familiarity

Please indicate how familiar you are with each of the words on the list. By “familiar” we mean that you know this word well and are able to use and comprehend it whenever you encounter it in daily communication situations. Please rate “1” for a word that is “least familiar” and “7” for a word that is “most familiar”. If you do not know the meaning of a word, please check the box “Unknown word”.

用字頻率 (frequency)

請填下每一個字的用字頻率。用字頻率是指你在日常生活中用那個字的次數。1 為從不運用，7 為經常運用。例：你可能很頻密地用「前往」一字，但不用「回饋」一字，那你便應該評「前往」為「7」，評「回饋」為「1」。如果你不懂得那個字，請選擇「不認識此字」一欄。

[1 為從不運用, 7 為經常運用]

Frequency

Please indicate how frequently you use each of the words on the list. By “frequency” we mean how frequent you use or encounter this word in your daily life. Please rate “1” for a word that is “least frequent” and “7” for a word that is “most frequent”. If you do not know the meaning of a word, please check the box “Unknown word”.

字詞可意像性 (imageability)

請填下每一個字的可意像性。可意像性是指有多容易明白它的形像。1 為極低，7 為極高。例：你可能覺得「獅子」的可意像性很高，但「同情」的可意像性很低，那你便應該評「獅子」為「7」，評「同情」為「1」。如果你不懂得那個字，請選擇「不認識此字」一欄。

[1 為極低，7 為極高]

Imageability

Please indicate how possible it is for you to form a mental image of each of the words on the list. By “imageable” we mean that you are able to visualize the word. Please rate “1” for a word that is “least imageable” and “7” for a word that is “most imageable”. If you do not know the meaning of a word, please check the box “Unknown word”.

自我指定程度 (self-reference)

請填下每一個字的自我指定程度。自我指定程度是指一個字和自己的關係的程度。自我指定程度高，表示和自己及自己的思維、感受、經歷有密切關係，自我指定程度低，表示和自己及自己的思維、感受、經歷沒有甚麼關係。例如：一位從事教育行業的參與者可能會覺得「講座」和他很有關係，但相對地覺得「熱帶雨林」和他沒有關係。1 為和自己完全無關，7 為和自己有密切關係。如果你不懂得那個字，請選擇「不認識此字」一欄。

[1 為和自己完全無關，7 為和自己有密切關係]

Please indicate how much you can relate yourself to each of the words on the list. “Self reference” refers to the degree to which you can relate to this word from your thinking, feeling or past experience. Please rate “1” for a word that is of “least self-reference” and “7” for a word that is of “most self-reference”. If you do not know the meaning of a word, please check the box “Unknown word”.

情緒反應程度 (Emotional arousal)

請填下每一個字所引起的情緒反應程度。情緒反應程度是指接觸一個字時所喚起你的情緒的程度。1 為極低，7 為極高。例：你可能覺得「歡天喜地」是一個情緒反應程度很高的字，但「茶杯」是一個情緒反應程度很低的字，那你便應該評「歡天喜地」為「7」，評「茶杯」為「1」。如果你不懂得那個字，請選擇「不認識此字」一欄。

[1 為極低，7 為極高]

Please indicate the degree of emotional arousal that each of the words on the list can bring you. Emotional arousal refers to the intensity of emotions (regardless of positive or negative) that is created by a word. Please rate “1” for a word that is “least arousing” and “7” for a word that is “most arousing”. If you do not know the meaning of a word, please check the box “Unknown word”.

情緒正負面程度 (emotional valence)

請填下每一個字所引起的情緒正負面程度。情緒正面是指一個字能帶出正面的情緒，情緒負面是指一個字能帶出負面的情緒。1 為極負面，7 為極正面。例：如果「快樂」帶有很多正面情緒，但「死亡」帶有很多負面情緒，你便應該評「快樂」為「7」、「死亡」為「1」。如果你不懂得那個字，請選擇「不認識此字」一欄。

[1 為極負面，7 為極正面]

Please indicate the degree of emotional valence that each of the words on the list can bring you. Emotional valence describes the extent to which an emotion is positive or negative.

Please rate “1” for a word that is “most negative”, “7” for a word that is “most positive” and “4” for a word that you think is “neutral” (neither positive or negative). If you do not know the meaning of a word, please check the box “Unknown word”.

APPENDIX B

Definition of semantic transparency of the 297 word stimuli for subjective ratings:

1 – Transparent: The semantic radical(s) of one, some or all of the characters indicate the conceptual category / contribute(s) to the meaning of the word directly.

2 – Semi-transparent: The semantic radical(s) of one, some or all of the characters contribute to the meaning of the word indirectly.

3 – Opaque: The semantic radical of all of the characters provide no information about character meaning

APPENDIX C

Descriptive statistics of rated and objective features in the positive, neutral and negative valence category in Cantonese

	Positive (30 words)				Neutral (257 words)				Negative (10 words)			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Age-of-acquisition	3.99	0.49	2.88	4.76	4.16	0.42	2.82	5.14	4.21	0.46	3.24	4.74
Frequency of use	4.37	0.46	3.29	5.38	4.27	0.49	2.69	5.33	4.06	0.32	3.61	4.67
Familiarity	5.32	0.24	4.73	5.90	5.32	0.28	4.66	6.04	5.29	0.17	5.08	5.53
Self-referential rating	4.99	0.21	4.63	5.42	4.04	0.40	3.23	5.12	3.37	0.23	2.83	3.63
Imageability	5.03	0.35	4.50	5.98	4.03	0.45	3.00	5.14	3.32	0.26	2.83	3.63
Emotional arousal	4.81	0.22	4.45	5.42	3.97	0.42	2.98	5.29	3.46	0.22	2.98	3.78
Syllable length	2.00	0.60	1.00	4.00	2.18	0.70	1.00	4.00	2.30	0.95	1.00	4.00
Semantic transparency	2.52	0.83	1.00	3.00	2.57	0.60	1.00	3.00	2.60	0.70	1.00	3.00

APPENDIX 4

Descriptive statistics of rated and objective features in the positive, neutral and negative valence category in Mandarin

	Positive (56 words)				Neutral (156 words)				Negative (85 words)			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Age-of-acquisition	4.09	0.64	2.85	5.38	4.24	0.60	2.73	5.76	4.44	0.61	2.85	5.38
Frequency of use	4.81	0.82	3.00	6.24	4.45	0.73	2.73	5.76	4.24	0.64	2.60	5.44
Familiarity	5.28	0.54	4.20	6.27	4.98	0.51	3.36	6.27	4.80	0.46	3.68	5.77
Self-referential rating	4.40	0.57	2.54	5.42	3.73	0.67	2.04	5.42	3.37	0.53	2.12	4.46
Imageability	3.71	0.54	2.85	5.04	3.66	0.84	2.36	5.46	3.48	0.51	2.76	4.92
Emotional arousal	4.05	0.44	3.15	4.88	2.77	0.61	1.73	4.35	3.75	0.56	2.54	5.19
Syllable length	2.29	0.82	1.00	4.00	2.06	0.55	1.00	4.00	2.27	0.82	1.00	4.00
Semantic transparency	2.64	0.59	1.00	3.00	2.55	0.67	1.00	3.00	2.58	0.61	1.00	3.00

APPENDIX 5

Means and standard deviations of word list in all rated features in Traditional Chinese.

Stmul	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
一事無成_1	4.08	1.43	3.76	1.77	5.10	1.94	4.29	1.77	4.40	1.76	4.50	1.71	4.00	1.90
上當_1	3.98	1.30	3.75	1.68	5.08	2.06	3.73	1.74	3.57	1.76	3.84	1.78	3.47	1.72
不幸_1	4.59	1.28	4.43	1.68	5.45	1.93	3.69	1.71	3.63	1.66	3.88	1.73	3.42	1.64
享受_1	3.55	1.36	4.73	1.72	5.55	1.67	4.40	1.65	4.21	1.67	4.40	1.66	4.50	1.66
人間_1	4.44	1.20	3.86	1.88	4.90	1.89	3.60	1.87	3.48	1.87	3.37	1.84	3.63	1.73
休息_1	4.02	1.09	4.71	1.71	6.04	1.43	4.25	1.88	3.96	1.78	3.88	1.73	4.10	1.75
休息_2	3.98	1.05	4.25	2.10	5.29	1.93	4.53	2.06	4.31	2.05	4.16	2.04	4.39	1.97
低語_1	4.78	1.37	2.78	1.79	4.66	2.12	3.70	2.09	3.92	1.95	3.63	2.03	3.88	1.83
來源_1	4.80	1.15	3.60	1.70	5.25	1.82	3.62	1.87	3.62	1.92	3.44	1.90	3.77	1.71
促進_1	4.18	1.66	4.29	1.64	5.10	2.17	5.42	1.86	5.00	2.22	5.25	1.98	5.52	1.72
保持_1	3.39	1.46	4.42	1.72	5.39	1.86	4.96	1.74	4.63	1.86	4.71	1.83	4.92	1.66
保持_2	4.00	1.12	4.18	1.96	5.12	1.89	4.27	1.81	3.96	1.75	3.90	1.75	4.13	1.63
保證_1	4.22	1.47	3.82	1.72	4.94	1.87	4.53	1.89	4.20	1.96	4.22	1.91	4.41	1.80
保護_1	3.57	1.17	4.78	1.74	5.61	1.63	4.33	1.80	4.15	1.84	4.08	1.89	4.38	1.79
信任_1	3.61	1.28	4.22	1.90	5.68	1.57	4.10	1.95	3.83	1.83	3.94	1.94	4.15	1.94
信心_1	3.33	1.48	5.18	1.57	5.86	1.59	4.65	1.73	4.33	1.63	4.49	1.64	4.69	1.66
信念_1	3.41	1.59	4.80	1.55	5.40	1.80	4.27	2.03	3.83	2.06	4.17	2.04	4.25	1.99
個人_1	4.44	1.15	4.57	1.71	5.22	1.80	5.04	1.67	4.76	1.64	4.49	1.94	4.86	1.60

Stmulu	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
值得_1	4.12	1.22	3.96	2.11	5.29	1.87	3.92	1.90	3.63	1.85	3.73	1.73	4.04	1.84
假期_1	4.16	1.43	4.46	1.92	5.41	1.91	4.37	1.80	4.10	1.91	4.23	1.85	4.38	1.84
假期_2	4.04	1.20	5.34	1.55	5.78	1.53	4.02	1.81	3.87	1.83	4.04	1.86	4.15	1.84
假設_1	4.25	1.13	4.12	1.90	5.67	1.62	3.52	1.79	3.00	1.62	2.98	1.70	3.31	1.60
傷口_1	3.80	1.04	4.59	1.65	5.55	1.76	4.15	2.03	4.27	2.12	3.94	2.05	3.73	2.00
傷害_1	3.92	1.45	5.12	1.57	5.59	1.64	3.98	1.93	3.94	1.88	4.18	1.90	3.63	1.88
儀式_1	4.36	1.55	4.31	1.68	5.14	2.17	4.96	2.00	5.27	1.86	4.81	2.15	5.02	1.85
儀式_2	4.84	1.07	4.16	1.78	5.18	2.03	3.86	1.88	4.04	1.94	3.66	1.99	3.92	1.75
優點_1	4.35	1.26	4.94	1.73	5.39	1.84	3.88	1.99	3.60	1.88	3.67	1.90	3.94	1.96
分心_1	4.59	1.22	4.06	1.86	5.54	1.66	4.06	1.96	3.88	1.83	3.94	1.90	3.71	1.84
分手_1	3.59	1.51	5.14	1.84	5.08	2.10	4.27	1.91	4.53	1.80	4.63	1.88	4.00	1.89
分散_1	4.74	1.10	3.84	2.10	5.02	1.93	3.59	1.98	3.53	1.84	3.35	1.88	3.53	1.79
分散_2	3.80	1.06	3.82	1.74	5.31	1.85	4.90	1.83	4.81	1.80	4.81	1.87	4.88	1.73
刺激_1	4.08	1.34	4.20	1.96	5.16	1.95	4.27	1.84	4.25	1.84	4.42	1.90	4.33	1.75
勇敢_1	4.28	1.13	4.41	1.81	5.35	2.00	3.96	1.84	3.84	1.86	3.92	1.79	4.08	1.86
動力_1	4.18	1.47	3.86	1.82	5.16	2.01	3.88	1.88	3.54	1.80	3.79	1.79	3.98	1.89
動機_1	4.59	1.61	4.88	1.94	5.14	1.96	4.10	1.86	3.80	2.00	4.00	1.79	4.04	1.78
動物園_1	4.02	1.16	3.68	1.94	5.04	2.05	3.71	2.22	4.35	2.32	3.69	2.25	4.12	2.04
勝利者_1	4.02	1.29	4.55	1.74	5.53	1.76	4.38	1.86	4.42	1.88	4.33	1.85	4.50	1.77
勤學_1	4.37	1.09	3.55	1.77	5.08	2.04	4.04	1.80	3.96	1.81	3.94	1.75	4.19	1.77
十全十美_1	4.57	1.19	4.04	1.81	5.31	2.07	3.42	2.02	3.27	1.91	3.37	1.94	3.79	2.15
協會_1	4.80	1.21	3.78	1.65	4.80	2.25	4.15	1.99	4.29	1.89	3.79	2.11	4.19	1.78
協會_2	4.63	1.09	4.00	1.98	5.20	1.93	3.38	1.74	3.46	1.72	3.08	1.69	3.44	1.51
危機_1	4.57	1.19	4.51	1.57	5.29	1.88	3.80	1.71	3.57	1.81	3.69	1.76	3.47	1.58
危險_1	4.26	1.16	4.02	1.87	5.08	1.82	3.56	1.84	3.48	1.90	3.58	1.96	3.15	1.75

Stmulu	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
受害者_1	4.06	1.50	4.12	1.62	5.31	1.79	3.69	2.13	4.02	2.15	3.88	2.05	3.46	2.04
口音_1	4.41	1.12	3.88	1.74	5.45	1.91	4.58	2.00	4.38	1.99	4.29	2.06	4.44	1.82
可愛_1	3.80	1.52	5.02	1.64	5.63	1.80	4.27	1.89	4.29	1.85	4.31	1.92	4.62	1.87
吃不消_1	4.76	1.24	3.14	1.94	5.10	1.77	3.71	1.93	3.50	1.88	3.60	1.91	3.56	1.81
同流合污_1	4.27	1.58	4.43	2.09	5.33	1.88	3.59	1.87	3.78	1.72	3.92	1.76	3.49	1.76
吸引_1	4.37	1.09	4.35	1.67	5.96	1.56	4.06	1.90	3.83	1.90	4.04	1.91	4.10	1.85
吸煙_1	4.58	1.18	4.12	2.01	5.14	2.09	3.94	2.01	4.48	2.03	4.00	1.99	3.79	1.88
命運_1	4.18	1.44	4.22	1.58	5.29	2.27	4.80	1.95	4.43	2.18	4.76	1.95	4.76	1.85
和平_1	4.42	1.05	4.38	1.65	5.32	1.87	3.96	1.73	3.65	1.82	3.94	1.72	4.13	1.80
品學兼優_1	4.33	0.95	3.90	1.99	5.41	1.97	4.48	1.75	4.33	1.75	4.25	1.74	4.60	1.67
品格_1	4.26	1.23	4.86	1.63	5.67	1.72	4.17	1.97	3.77	1.93	3.79	1.93	4.04	1.87
員工_1	3.82	1.66	4.63	1.83	5.41	1.71	5.15	1.75	5.58	1.49	4.98	1.96	5.31	1.42
員工_2	3.69	1.61	3.27	1.84	5.55	1.80	5.18	1.97	5.59	1.81	4.98	2.18	5.27	1.74
哭_1	2.82	1.29	4.98	1.59	5.25	1.96	3.92	1.98	4.27	2.12	4.14	1.99	3.73	1.92
問路_1	4.29	1.01	4.08	1.83	5.12	2.13	4.08	1.99	4.19	2.03	3.83	2.14	4.12	1.91
善_1	3.47	1.43	3.92	2.06	5.12	2.01	4.71	1.65	4.50	1.64	4.54	1.65	4.85	1.49
喜出望外_1	4.35	1.31	3.98	1.89	5.27	2.03	3.76	1.73	3.63	1.72	3.82	1.83	4.02	1.83
喜愛_1	4.00	1.25	4.47	2.01	5.39	1.79	3.94	2.03	3.75	1.98	3.82	2.06	4.06	2.09
喜愛_2	3.96	1.24	4.63	1.91	6.10	1.20	4.45	1.90	4.12	1.91	4.35	1.88	4.53	1.91
單純_1	4.08	1.29	3.47	1.81	5.24	1.92	3.81	2.07	3.75	2.05	3.83	2.04	3.96	1.93
器官_1	4.96	1.15	3.75	1.98	4.98	2.10	3.62	1.86	3.78	2.04	3.26	1.86	3.54	1.67
嚇怕_1	3.02	1.45	4.51	1.50	5.65	1.59	3.87	2.25	3.92	2.24	3.98	2.26	3.62	2.22
困_1	4.00	1.41	4.71	1.68	5.14	2.00	4.00	2.09	4.10	2.06	4.19	2.06	3.88	2.04
報應_1	4.22	1.15	4.04	1.95	5.45	1.95	3.35	2.03	3.35	2.01	3.60	1.97	3.29	1.90
報應_2	4.59	1.31	4.51	1.67	5.29	1.97	3.98	1.90	4.06	1.95	4.19	1.83	3.87	1.85

Stmulu	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
壞_1	4.02	1.27	4.84	1.80	5.16	2.07	4.71	1.84	4.85	1.70	4.71	1.75	4.40	1.85
夢_1	3.84	1.14	4.90	1.80	5.59	1.77	4.35	2.03	4.33	2.03	4.18	2.02	4.31	1.87
大功告成_1	4.62	1.10	3.82	1.72	5.82	1.48	3.94	1.91	3.84	1.95	3.98	1.95	4.29	2.08
大發雷霆_1	4.67	1.09	3.76	1.75	5.24	2.08	3.29	1.91	3.56	1.91	3.56	1.88	3.08	1.69
天堂_1	4.35	1.53	3.96	2.04	5.84	1.62	3.87	1.86	3.83	1.87	3.90	1.81	4.13	1.86
天線_1	3.80	1.08	4.08	1.83	5.12	2.19	4.41	2.13	5.06	1.92	4.39	2.10	4.75	1.71
天花_1	4.22	1.08	4.04	1.96	4.75	2.20	4.50	2.13	5.12	1.85	4.38	2.18	4.69	1.82
太陽_1	3.69	1.36	4.27	1.88	4.88	2.20	3.50	1.89	3.94	2.22	3.27	1.83	3.69	1.89
失敗_1	4.41	1.22	5.14	1.60	5.16	1.89	4.20	1.91	4.16	1.92	4.47	1.89	3.84	1.94
女孩_1	4.10	1.57	4.43	2.02	5.33	1.83	5.37	1.80	5.44	1.92	4.96	2.01	5.10	1.79
好_1	3.84	1.49	4.90	1.96	5.71	1.64	4.24	1.78	3.94	1.73	4.14	1.81	4.39	1.84
婚姻_1	4.55	1.29	4.24	1.69	4.98	2.11	4.17	1.80	4.13	1.66	4.21	1.71	4.33	1.67
學生_1	3.33	1.35	4.88	1.80	5.58	1.83	3.90	1.98	4.08	2.15	3.50	1.87	3.79	1.74
守信用_1	4.16	1.08	3.75	1.61	5.33	1.82	3.75	2.04	3.37	1.80	3.54	1.92	3.77	1.98
安全_1	3.86	1.36	4.64	1.90	5.41	1.80	3.98	1.95	3.84	1.95	3.78	1.90	4.08	1.97
安樂_1	3.86	1.30	4.39	1.76	5.35	1.97	4.82	2.01	4.73	1.99	4.82	1.95	5.04	1.90
完成_1	3.72	1.20	4.90	1.66	5.53	1.81	5.18	1.71	4.92	1.89	4.94	1.83	5.16	1.67
宗教_1	3.70	1.28	4.28	1.86	5.88	1.39	4.56	1.96	4.37	1.95	4.33	1.93	4.54	1.71
宗教_2	3.39	1.46	4.55	1.88	5.86	1.56	5.52	1.73	5.35	1.85	5.27	1.87	5.50	1.55
官感_1	4.61	1.34	3.69	1.87	5.08	1.92	3.50	1.83	3.21	1.72	3.29	1.70	3.38	1.55
害怕_1	3.22	0.99	4.32	1.67	5.53	1.65	4.98	1.67	4.80	1.80	4.88	1.71	4.46	1.81
家喻戶曉_1	3.73	1.43	4.14	2.25	5.20	1.88	4.98	1.83	4.94	1.90	4.94	1.89	5.34	1.52
家庭_1	3.88	1.21	4.84	1.49	5.38	1.70	4.94	1.76	4.78	1.87	4.65	1.83	4.80	1.72
家庭主婦_1	4.18	1.48	4.31	1.85	5.54	1.75	4.08	2.06	4.57	2.05	3.90	2.13	4.24	1.83
寓言_1	4.73	1.27	3.47	1.64	5.37	1.98	4.33	2.30	4.44	2.21	4.23	2.29	4.58	2.04

Stmuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
實至名歸_1	4.84	1.33	3.80	1.89	5.57	1.80	3.48	1.92	3.40	1.98	3.44	1.95	3.76	2.06
寶藏_1	3.90	1.19	2.98	1.70	5.04	2.14	3.27	1.88	3.73	2.06	3.58	1.94	3.83	1.93
專注_1	4.29	1.22	3.94	1.79	5.45	1.54	4.40	1.99	4.15	1.84	4.02	1.91	4.35	1.88
對手_1	4.61	1.18	4.31	1.75	5.88	1.72	4.29	1.75	4.41	1.66	4.25	1.70	4.22	1.63
小麥_1	4.02	1.10	4.69	2.07	5.24	1.80	3.60	1.89	4.17	2.03	3.40	1.86	3.85	1.56
小麥_2	4.37	1.06	3.75	1.95	4.84	2.16	3.29	2.01	3.88	2.25	3.13	2.01	3.60	1.83
尖沙咀_1	3.76	1.31	4.96	1.91	5.06	1.99	4.00	2.12	4.27	2.33	3.62	2.27	4.00	2.03
尷尬_1	4.64	1.19	4.24	1.68	5.24	1.99	4.12	1.88	4.04	1.80	4.29	1.75	3.87	1.80
崇尚_1	4.61	1.15	3.90	1.87	5.06	1.97	4.13	1.79	3.90	1.90	4.04	1.84	4.29	1.75
崇拜_1	4.67	1.35	4.98	1.86	5.54	1.85	4.10	1.98	3.87	1.94	3.77	1.92	4.10	1.89
工作_1	4.18	1.24	4.90	1.78	5.24	2.06	4.60	1.90	4.42	1.85	4.20	1.77	4.24	1.72
工廠_1	4.39	1.04	3.82	2.09	5.29	1.92	3.44	1.96	4.17	2.14	3.37	2.06	3.71	1.82
工廠_2	3.63	1.09	3.44	1.85	5.04	2.04	3.88	2.19	4.67	2.19	3.88	2.21	4.25	1.96
帳單_1	3.92	1.48	4.80	1.83	5.14	1.91	3.71	1.90	3.87	2.03	3.50	1.97	3.60	1.75
帳篷_1	4.29	1.29	3.76	1.88	5.18	2.22	3.52	2.02	4.22	2.14	3.42	2.06	3.82	1.80
平凡_1	4.56	1.31	5.12	1.72	5.65	1.55	4.21	1.87	4.00	1.84	3.87	1.91	4.08	1.72
平方米_1	4.71	1.20	4.06	2.28	4.73	2.24	4.65	2.18	5.20	1.73	4.45	2.34	4.96	1.73
建立_1	4.68	1.17	3.82	2.02	5.24	1.85	4.43	1.98	4.16	1.97	4.20	1.94	4.47	1.84
強壯_1	4.12	1.07	4.04	2.02	5.39	1.83	4.23	1.74	4.19	1.87	4.04	1.81	4.27	1.73
強迫_1	4.34	1.00	4.43	1.70	5.61	1.69	3.96	1.88	3.71	1.89	4.02	1.82	3.56	1.83
循循善誘_1	4.43	1.35	3.35	1.94	4.76	2.06	3.84	1.91	3.84	1.96	3.86	1.91	4.16	1.83
微笑_1	4.29	1.27	4.69	2.07	5.55	1.77	3.92	1.96	3.98	2.02	3.85	2.00	4.02	1.96
心_1	3.16	1.30	4.69	1.87	5.42	1.81	3.61	1.99	3.69	2.09	3.16	1.79	3.45	1.75
忘記_1	4.08	1.41	4.35	1.85	5.25	1.97	4.00	1.87	3.72	1.80	3.68	1.91	3.76	1.73
忠心_1	3.47	1.47	3.92	1.89	5.55	1.83	4.60	1.75	4.25	1.81	4.46	1.73	4.73	1.62

Stmulu	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
快樂_1	3.35	1.00	4.27	1.79	5.16	2.10	3.73	2.10	3.52	2.01	3.73	2.09	3.88	2.17
恢復_1	4.12	1.10	4.47	1.58	5.39	1.93	4.12	1.91	3.84	1.96	4.00	1.91	4.24	1.84
情況_1	4.31	1.05	4.14	2.05	5.88	1.53	4.55	2.01	4.29	2.11	4.25	2.17	4.59	1.85
惡夢_1	3.57	1.14	4.45	1.67	5.02	2.04	4.27	1.81	4.31	1.87	4.31	1.84	3.94	1.87
想法_1	4.25	1.13	4.82	1.67	5.08	2.05	3.46	1.98	3.10	1.77	3.10	1.81	3.23	1.71
想法_2	4.28	1.23	3.86	1.90	5.33	1.91	3.50	2.00	3.08	1.76	3.00	1.71	3.19	1.69
意圖_1	5.14	1.18	3.84	1.94	5.20	1.91	4.12	1.94	3.98	1.96	3.98	1.94	3.94	1.84
愛意_1	4.29	1.46	3.92	1.87	5.41	1.83	4.12	1.84	3.92	1.76	4.16	1.80	4.24	1.81
感激_1	3.82	1.35	4.88	1.63	5.47	1.92	3.94	2.05	3.73	1.95	3.90	1.97	4.08	2.06
感謝_1	4.12	1.23	5.27	1.60	5.44	1.91	3.96	2.14	3.78	2.02	3.80	2.07	4.00	2.14
慶祝_1	3.98	1.29	5.22	1.67	5.12	1.83	4.29	1.53	4.31	1.70	4.39	1.61	4.55	1.65
慾望_1	4.20	1.43	3.63	1.82	5.31	1.76	4.88	1.82	4.73	1.82	4.98	1.74	4.71	1.82
憂慮_1	4.74	1.38	3.96	1.85	5.41	1.92	3.37	2.04	3.02	1.73	3.40	2.01	2.83	1.71
懦弱膽小_1	4.33	1.23	2.69	1.68	4.71	2.13	3.77	1.97	3.92	1.89	3.90	1.87	3.58	1.83
懷疑_1	4.14	1.17	4.24	1.85	5.18	1.83	4.52	1.84	4.31	1.80	4.62	1.72	4.17	1.81
成功_1	3.67	1.34	4.67	1.76	5.22	1.77	4.04	1.83	3.71	1.66	3.90	1.72	4.15	1.91
成功_2	4.49	1.14	5.14	1.48	5.71	1.59	4.69	1.78	4.39	1.84	4.65	1.73	4.76	1.77
成就_1	4.16	1.30	3.86	1.64	5.25	1.95	3.69	2.03	3.27	1.89	3.63	1.98	3.73	2.04
戰爭_1	3.49	1.35	3.96	1.81	5.41	1.86	3.90	2.18	4.35	2.27	4.29	2.14	3.85	2.20
打_1	3.61	1.25	4.47	1.80	5.00	2.13	4.98	1.77	5.29	1.75	5.12	1.78	4.85	1.81
投訴_1	3.98	1.44	5.22	1.58	5.61	1.72	4.04	2.00	3.98	2.02	4.24	1.96	3.80	1.96
抵達_1	4.41	1.27	3.67	1.79	5.12	2.02	3.75	1.79	3.87	1.76	3.63	1.92	3.96	1.67
拋棄_1	4.71	1.08	4.45	2.03	5.63	1.65	4.88	2.03	4.96	1.89	5.12	1.89	4.55	2.15
拍攝_1	4.24	1.68	4.48	2.01	5.61	1.82	4.43	1.99	4.65	2.01	4.35	2.05	4.55	1.81
拿_1	3.37	1.20	4.04	1.81	5.04	2.22	4.04	1.78	4.29	1.72	3.81	1.87	4.13	1.56

Stmulu	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
掉_1	3.94	1.10	4.33	1.70	5.29	2.18	4.19	1.96	4.50	1.84	4.06	1.97	4.21	1.82
損傷_1	4.14	1.23	4.50	1.67	5.78	1.67	4.96	1.88	5.00	1.81	4.98	1.90	4.63	2.00
損失_1	3.92	1.10	4.43	1.47	5.42	1.77	4.73	1.86	4.67	1.87	4.73	1.83	4.42	1.90
擺架子_1	4.63	1.30	3.61	1.79	4.78	2.07	3.48	1.84	3.75	1.87	3.83	1.89	3.44	1.81
攻擊_1	3.45	1.38	3.76	1.82	4.76	2.21	3.50	1.78	3.83	1.78	3.67	1.81	3.38	1.66
政治家_1	4.76	1.38	3.29	1.65	5.24	2.00	4.90	2.15	5.31	1.85	4.98	2.04	5.23	1.71
效果_1	3.84	1.22	3.90	1.84	5.22	1.97	4.65	2.22	4.25	2.26	4.27	2.22	4.52	2.09
教堂_1	3.76	1.01	4.49	1.92	5.56	1.76	3.48	2.06	3.79	2.27	3.46	1.95	3.65	2.00
文化_1	4.29	1.60	5.33	1.56	5.35	1.90	4.23	1.78	4.04	1.87	3.90	1.88	4.27	1.72
新年_1	3.69	1.39	4.20	1.84	5.59	1.69	4.46	2.23	4.56	2.30	4.42	2.30	4.65	2.20
斷_1	4.22	1.29	4.68	1.75	4.82	2.16	3.87	1.98	4.12	1.99	3.94	2.00	3.83	1.88
旅程_1	4.24	1.36	4.22	1.84	5.20	1.88	4.13	1.76	3.85	1.85	4.04	1.85	4.25	1.80
早上_1	2.96	1.23	4.88	1.73	5.41	1.81	4.94	1.95	5.00	2.03	4.63	2.13	4.92	1.85
明白_1	4.06	1.08	4.74	1.87	5.37	1.91	4.92	1.81	4.47	1.87	4.61	1.86	4.75	1.74
晚上_1	3.92	1.25	4.67	1.94	5.63	1.64	4.35	1.90	4.57	2.02	4.02	2.01	4.27	1.77
晚餐_1	3.88	1.23	4.84	1.55	5.00	2.07	4.10	2.03	4.17	2.16	3.71	2.03	3.98	1.95
會議_1	3.35	1.60	4.31	1.96	5.08	2.13	4.83	1.71	4.81	1.83	4.38	2.02	4.62	1.73
月亮_1	3.57	1.22	4.68	1.75	5.25	1.98	4.27	1.99	4.87	1.99	4.15	1.97	4.52	1.70
朋友_1	2.88	1.14	4.90	2.00	5.36	2.10	4.94	1.97	4.88	1.98	4.79	1.99	4.85	1.93
朋友_2	3.44	1.31	4.75	1.96	5.73	1.52	5.33	1.75	5.27	1.81	5.08	1.79	5.22	1.71
朱古力_1	3.40	1.32	4.70	1.71	4.88	2.28	4.04	1.91	4.37	2.12	3.90	1.91	4.20	1.76
條件_1	3.55	1.25	4.14	1.85	5.27	1.77	3.96	1.98	3.63	1.93	3.71	1.87	3.81	1.75
條件_2	4.04	1.09	4.63	1.57	5.64	1.82	3.65	1.74	3.33	1.65	3.37	1.59	3.47	1.49
森林_1	4.29	1.19	3.75	2.00	5.04	2.23	4.63	2.10	5.35	1.95	4.73	2.15	4.88	1.85
極品_1	4.86	1.23	3.65	1.87	5.49	1.77	3.60	1.95	3.60	2.03	3.77	1.89	4.02	1.88

Stmulu	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
樂_1	3.98	0.97	4.59	1.87	5.20	1.87	3.73	1.78	3.65	1.84	3.67	1.81	3.92	1.86
樂天_1	4.41	1.13	4.29	1.86	5.86	1.48	4.27	1.87	4.04	1.87	4.27	1.96	4.43	1.85
樂於助人_1	4.57	1.10	4.45	1.59	5.75	1.57	4.49	1.80	4.25	1.80	4.31	1.77	4.55	1.78
樹木_1	3.90	1.33	3.76	1.94	5.57	1.80	3.43	2.18	3.94	2.44	3.18	2.17	3.71	2.17
橫額_1	4.90	1.14	4.69	1.84	5.39	1.95	3.65	1.99	4.22	2.05	3.53	2.01	3.90	1.69
歡迎_1	4.18	1.29	4.16	1.91	5.02	1.96	4.58	1.72	4.48	1.86	4.46	1.83	4.77	1.65
武器_1	3.94	1.05	3.76	1.84	5.39	1.78	4.29	1.88	4.90	1.91	4.57	1.85	4.37	1.78
毀滅_1	3.45	1.54	4.75	1.97	5.18	2.00	3.56	1.96	3.69	1.90	3.83	1.93	3.35	1.90
母親_1	3.76	1.64	5.00	1.67	5.67	1.75	4.87	2.15	4.92	2.27	4.54	2.16	4.88	2.05
氣候_1	4.12	1.18	3.55	2.07	5.04	1.99	3.41	2.17	3.31	2.18	3.25	2.16	3.35	1.97
氣候_2	5.00	1.15	3.65	1.91	4.82	2.20	3.56	1.91	3.52	1.99	3.37	2.00	3.54	1.78
水深火熱_1	3.67	1.54	4.24	1.92	4.96	2.12	4.56	1.88	4.75	1.72	4.87	1.70	4.56	1.78
汽水罐_1	4.29	1.30	3.62	1.94	5.51	1.89	4.56	1.96	5.02	2.00	4.19	2.21	4.65	1.80
沉悶_1	4.51	1.29	4.41	1.92	5.47	1.84	4.60	1.91	4.56	1.87	4.54	1.95	4.31	1.97
沒趣_1	4.14	1.11	4.02	1.94	5.04	1.99	4.19	2.10	4.12	2.08	4.19	2.11	4.00	2.07
沙漠_1	3.65	1.21	3.90	1.85	4.94	2.07	4.48	2.19	5.10	2.09	4.50	2.21	4.67	1.92
沮喪_1	4.24	1.54	4.67	1.61	5.73	1.50	4.43	1.99	4.25	1.96	4.41	1.93	3.96	1.95
油畫_1	4.43	1.28	4.10	2.06	5.41	2.04	3.71	2.15	4.38	2.23	3.69	2.24	4.15	1.97
法律_1	4.86	1.04	4.16	1.71	5.43	1.75	3.52	1.73	3.56	1.82	3.25	1.77	3.62	1.62
法律_2	4.49	1.49	4.48	1.97	5.63	1.68	4.25	1.82	4.25	1.91	4.04	1.86	4.31	1.69
活動_1	3.82	1.20	4.75	1.97	5.14	2.02	4.17	1.97	3.96	1.95	3.77	1.99	4.04	1.91
活潑_1	3.73	1.20	4.24	1.80	5.02	2.09	4.42	1.81	4.33	1.85	4.38	1.74	4.58	1.78
海_1	3.39	1.15	3.80	1.61	5.25	2.14	5.40	1.80	5.98	1.39	5.42	1.84	5.63	1.46
海灘_1	4.00	1.12	4.00	1.83	5.08	2.00	3.78	1.85	4.25	2.12	3.78	1.89	4.02	1.77
混亂_1	3.71	1.33	4.61	1.74	5.41	2.00	4.04	1.81	3.98	1.77	4.00	1.70	3.69	1.67
添_1	4.16	1.39	4.02	2.22	5.04	1.95	4.23	2.03	4.31	1.98	4.13	2.06	4.48	1.81

Stmulu	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
減少_1	3.92	1.25	4.86	1.73	5.35	1.78	3.60	1.99	3.48	1.91	3.30	1.97	3.38	1.77
減少_2	3.69	1.38	4.94	1.58	4.96	2.00	3.31	1.84	3.08	1.68	3.04	1.73	3.04	1.61
湖_1	3.65	1.11	4.14	1.84	5.35	1.99	4.10	2.14	4.81	2.10	4.17	2.16	4.50	1.86
滿足_1	4.48	1.09	3.86	2.10	5.71	1.49	3.88	2.04	3.63	1.95	3.77	1.94	4.00	2.08
漠視_1	4.61	1.20	4.02	1.73	5.40	1.82	3.56	1.80	3.38	1.79	3.56	1.76	3.29	1.66
激勵_1	4.27	1.17	4.04	1.81	5.42	1.62	4.42	1.78	4.15	1.80	4.48	1.67	4.52	1.64
濫用_1	5.08	1.15	4.35	1.65	5.72	1.76	4.25	1.99	4.21	1.91	4.27	1.94	4.10	1.93
炸彈_1	3.71	1.15	3.90	1.66	5.04	1.97	3.58	2.06	4.25	2.09	3.96	1.96	3.73	1.91
無動於衷_1	4.18	1.41	4.35	1.90	5.22	1.95	3.84	1.79	3.71	1.81	3.86	1.77	3.69	1.66
無憂無慮_1	4.65	1.18	3.96	1.88	4.76	2.08	3.52	2.01	3.44	1.96	3.60	2.06	3.77	2.04
焦慮_1	4.51	1.33	3.73	1.73	5.59	1.70	4.86	1.92	4.69	1.93	4.94	1.88	4.39	2.03
熟悉_1	4.67	1.19	4.12	1.89	5.39	1.86	5.02	1.80	4.75	1.91	4.81	1.86	5.06	1.67
熟能生巧_1	4.45	1.43	3.82	1.62	5.45	1.69	3.87	2.07	3.62	2.10	3.60	2.04	3.85	2.02
熱情_1	4.10	1.49	4.88	1.71	5.06	1.92	4.02	1.95	3.92	1.94	4.00	1.98	4.18	1.96
燒_1	3.80	1.15	4.24	1.85	5.00	2.02	3.79	1.81	4.33	1.80	3.87	1.76	3.87	1.67
爭取_1	4.65	1.11	4.06	1.88	5.67	1.73	3.73	1.82	3.37	1.67	3.63	1.73	3.67	1.68
爭取_2	4.27	1.47	4.70	1.97	5.76	1.46	4.31	1.82	4.00	1.80	4.08	1.76	4.25	1.77
爭執_1	4.31	1.21	4.43	1.62	5.08	1.90	3.37	1.79	3.38	1.81	3.54	1.83	3.10	1.62
父親_1	3.49	1.62	4.27	1.94	5.84	1.67	4.10	1.96	4.24	2.15	3.94	2.00	4.02	1.88
牛奶_1	3.71	1.17	3.78	2.14	5.41	2.01	4.50	1.98	5.06	1.96	4.33	2.11	4.71	1.77
狡猾_1	3.96	1.28	3.61	1.63	5.45	1.83	3.31	1.90	3.13	1.78	3.29	1.83	2.92	1.67
猜疑_1	4.41	1.19	3.33	1.88	4.90	1.97	3.57	2.04	3.33	1.94	3.61	1.97	3.25	1.85
玩_1	3.90	1.63	4.51	2.11	5.72	1.74	3.64	1.91	3.54	2.04	3.38	1.86	3.64	1.90
甜_1	4.18	1.67	4.65	1.84	5.50	1.73	3.27	1.84	3.42	2.01	3.29	1.84	3.48	1.89
生日_1	3.71	1.35	4.80	1.82	5.16	1.93	3.58	2.10	3.56	2.23	3.40	2.04	3.63	2.08

Stmulu	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
男_1	3.92	1.51	5.08	1.81	5.90	1.37	5.21	1.98	5.35	2.03	4.67	2.27	4.94	1.91
畫蛇添足_1	3.96	1.36	3.24	1.76	5.16	2.07	3.71	1.99	3.90	2.04	3.71	2.02	3.62	1.89
疲倦_1	3.84	1.35	4.67	2.01	5.61	1.72	4.10	1.91	3.96	1.89	3.71	1.82	3.52	1.77
病_1	3.10	1.12	4.39	2.17	5.75	1.71	4.56	1.67	4.48	1.74	4.33	1.80	4.04	1.76
病人_1	4.35	1.16	4.20	1.83	5.57	1.60	4.38	1.86	4.52	1.91	4.13	1.85	4.02	1.82
病人_2	4.04	1.34	5.12	1.80	5.75	1.57	4.08	1.86	4.20	1.93	3.78	1.85	3.75	1.73
痛苦_1	3.86	1.25	4.25	1.79	5.16	1.98	3.61	1.84	3.57	1.91	3.78	1.99	3.12	1.74
發脾氣_1	4.16	1.38	4.84	1.84	5.67	1.79	3.79	1.90	3.83	1.92	3.88	1.92	3.29	1.80
發表_1	4.51	1.46	3.42	1.70	5.20	2.06	3.92	1.80	4.06	1.85	3.90	1.85	4.14	1.64
百萬_1	4.47	1.19	3.98	1.86	5.33	1.81	4.67	2.06	4.77	2.09	4.83	2.01	4.85	1.81
監獄_1	4.27	1.22	3.75	1.93	5.22	2.02	4.39	2.20	5.14	1.88	4.67	2.03	4.51	2.02
相反_1	3.71	1.38	4.90	1.45	5.35	1.92	4.20	2.04	4.12	2.06	3.92	2.10	4.10	1.91
相配_1	4.18	1.48	4.33	1.81	5.59	1.65	3.94	1.76	3.85	1.74	3.90	1.73	4.13	1.73
眼睛_1	3.88	1.48	4.71	1.84	6.04	1.37	4.52	2.05	4.81	2.11	4.10	2.15	4.46	1.87
知法犯法_1	4.57	1.14	3.96	1.82	5.04	2.06	3.73	1.96	3.90	2.07	3.94	1.94	3.62	1.96
禁止_1	4.35	1.13	4.51	1.98	5.39	1.84	3.63	1.76	3.62	1.77	3.67	1.79	3.40	1.65
禮物_1	3.75	1.35	4.51	1.69	5.59	1.70	3.96	1.88	4.12	2.18	3.81	1.91	4.04	1.89
程度_1	4.37	1.44	4.82	1.61	5.71	1.62	3.40	1.88	3.17	1.80	3.27	1.85	3.44	1.73
程度_2	3.75	1.41	4.41	1.49	5.35	1.84	3.21	1.59	3.00	1.52	3.00	1.56	3.21	1.47
窮_1	3.98	1.27	4.67	1.87	5.14	2.04	3.63	2.11	3.63	2.07	3.59	2.09	3.20	1.93
笑_1	3.90	1.55	4.43	1.92	5.20	2.02	4.48	2.15	4.46	2.16	4.46	2.17	4.56	2.15
笑柄_1	4.55	1.22	3.82	1.75	5.49	1.76	3.37	1.73	3.29	1.63	3.50	1.85	3.13	1.63
笑柄_2	4.39	1.44	4.43	1.91	5.10	2.12	4.33	1.79	4.16	1.72	4.45	1.75	4.14	1.74
笑聲_1	4.14	1.48	4.88	1.70	5.49	1.78	3.61	2.11	3.69	2.25	3.67	2.22	3.80	2.25
笑聲_2	4.06	1.27	4.14	1.92	5.47	1.72	4.62	1.75	4.73	1.75	4.62	1.79	4.87	1.79

Stmulu	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
精明_1	4.45	1.33	5.10	1.62	5.41	1.82	4.71	1.93	4.35	2.04	4.48	1.98	4.75	1.89
精疲力竭_1	4.08	1.51	4.94	2.00	5.00	2.05	3.78	1.90	3.71	1.94	3.77	1.93	3.46	1.78
細菌_1	3.92	1.15	4.29	1.85	5.27	2.02	3.52	1.92	3.77	1.94	3.40	1.91	3.42	1.66
細菌_2	4.31	1.22	4.33	1.80	5.02	2.24	3.69	1.64	3.94	1.70	3.56	1.69	3.63	1.41
絆腳石_1	4.12	1.44	3.53	1.72	4.98	1.96	3.46	1.86	3.38	1.81	3.46	1.80	3.25	1.70
絕望_1	4.86	1.13	4.27	1.90	5.51	1.90	4.84	1.88	4.73	1.90	5.08	1.76	4.41	2.16
給予_1	4.61	1.28	4.25	2.08	5.14	2.04	4.88	1.86	4.60	1.98	4.58	1.97	4.85	1.80
編織_1	3.67	1.42	3.39	1.83	4.70	2.25	3.33	1.99	3.81	2.00	3.27	2.07	3.71	1.89
缺口_1	4.33	1.26	3.84	1.90	5.37	1.94	4.06	1.82	4.14	1.80	4.02	1.87	3.96	1.77
羞愧_1	5.04	1.37	3.45	1.90	5.31	1.91	4.13	2.17	4.08	2.16	4.23	2.15	3.85	2.10
老師_1	3.20	1.28	4.70	1.71	5.76	1.67	3.71	2.23	3.88	2.45	3.37	2.16	3.63	2.10
聲調_1	4.16	1.36	3.63	1.85	5.33	1.99	4.57	1.85	4.35	1.82	4.08	1.98	4.39	1.67
背叛_1	5.06	1.21	3.88	1.69	5.47	1.85	3.54	1.85	3.54	1.81	3.96	1.87	3.35	1.78
能幹_1	4.78	1.09	4.37	1.71	5.31	1.84	3.63	1.78	3.38	1.65	3.60	1.69	3.69	1.77
自強不息_1	4.82	1.18	4.00	1.84	4.75	2.00	3.73	1.77	3.49	1.67	3.63	1.71	3.92	1.75
自相矛盾_1	4.65	1.34	4.57	1.77	5.24	2.10	4.00	1.71	3.96	1.71	4.00	1.69	3.77	1.64
自言自語_1	4.39	1.13	4.52	1.91	5.43	1.93	4.65	2.16	4.87	2.00	4.48	2.19	4.54	2.02
自討沒趣_1	4.51	1.38	3.94	1.79	5.53	1.86	2.83	1.68	2.83	1.67	2.98	1.72	2.71	1.54
自誇_1	4.76	1.12	3.51	1.78	5.28	1.95	3.58	1.64	3.58	1.51	3.62	1.56	3.37	1.44
興奮_1	4.45	1.30	4.41	1.79	5.49	1.70	3.85	1.74	3.65	1.70	3.90	1.79	4.02	1.80
興致勃勃_1	3.84	1.29	3.71	1.80	4.98	1.88	4.04	1.95	3.92	1.97	4.08	1.98	4.25	1.95
興趣_1	4.49	0.95	4.57	1.84	5.51	1.84	5.00	1.77	4.67	1.89	4.75	1.92	5.00	1.76
舒適_1	4.18	1.14	4.33	1.72	5.50	1.80	4.90	1.83	4.63	1.96	4.65	2.01	4.98	1.80
良心_1	4.47	1.24	4.76	1.90	5.31	1.96	3.77	1.86	3.42	1.70	3.56	1.73	3.87	1.88

Stmulu	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
良心_2	4.47	1.08	4.10	1.91	4.71	2.12	4.83	1.88	4.48	1.98	4.67	1.91	4.85	1.80
花園_1	3.57	1.19	4.61	1.70	4.98	2.10	4.56	1.83	5.02	1.81	4.38	1.91	4.79	1.60
英雄_1	4.25	1.29	4.14	1.77	5.06	2.06	3.98	1.92	4.24	1.93	4.14	1.84	4.43	1.85
藉口_1	4.27	1.04	4.60	1.56	5.57	1.90	4.02	1.91	3.75	1.91	4.08	1.89	3.77	1.84
藉口_2	4.71	1.01	4.82	1.69	4.86	2.05	3.88	1.89	3.69	1.93	3.81	1.93	3.62	1.84
裝模作樣_1	3.75	1.38	4.02	1.79	5.71	1.69	3.94	1.95	4.13	1.97	4.19	1.88	3.85	1.90
見證_1	3.63	1.84	4.73	2.01	5.27	1.94	4.69	1.92	4.50	1.97	4.62	1.87	4.75	1.76
討厭_1	4.31	1.19	5.02	1.70	5.35	1.73	5.12	1.81	5.02	1.80	5.29	1.71	4.73	1.93
記得_1	3.82	1.26	4.61	1.94	4.96	2.01	3.52	1.81	3.31	1.73	3.19	1.73	3.48	1.72
記憶_1	4.25	0.93	3.92	1.93	5.24	1.93	3.81	1.68	3.42	1.58	3.50	1.63	3.63	1.44
診所_1	3.73	1.40	4.63	1.79	5.51	2.00	5.13	2.00	5.33	2.01	4.81	2.14	5.02	1.89
詫異_1	4.80	1.37	3.98	1.88	5.02	1.90	3.68	1.71	3.70	1.69	3.84	1.74	3.54	1.58
語言_1	4.16	1.25	5.38	1.55	5.57	1.75	5.22	1.87	4.69	1.99	4.75	1.98	4.98	1.75
誤會_1	4.39	1.36	4.57	1.89	5.25	1.83	4.58	1.94	4.37	2.00	4.65	1.89	4.25	1.99
謀殺_1	4.34	1.26	2.96	1.65	5.28	1.97	3.46	2.24	3.96	2.19	4.00	2.21	3.35	2.24
謀殺_2	4.84	1.15	4.12	1.80	5.24	1.88	4.10	1.97	4.65	1.73	4.55	1.76	4.04	1.94
謊話_1	3.24	1.21	4.10	1.95	5.31	1.70	3.33	1.84	3.29	1.75	3.35	1.81	2.98	1.63
讚_1	4.24	1.23	4.41	1.99	5.45	1.95	4.13	1.96	3.94	1.96	3.88	1.89	4.13	1.91
讚賞_1	4.12	1.38	4.31	1.81	5.51	1.77	4.10	2.15	3.81	2.11	4.04	2.11	4.19	2.20
豐足_1	4.10	1.65	4.14	1.82	4.70	2.12	4.37	1.83	4.29	1.89	4.40	1.87	4.63	1.87
負責_1	3.73	1.28	4.35	1.98	4.90	2.12	4.75	1.79	4.39	1.81	4.51	1.76	4.59	1.70
財富_1	3.92	1.16	3.64	1.82	5.53	1.70	4.79	1.92	4.83	1.95	4.81	1.94	4.94	1.86
財富_2	4.06	1.16	4.42	1.53	5.69	1.49	4.06	1.87	4.00	1.85	4.02	1.90	4.17	1.88
貪官_1	4.38	1.28	4.00	2.26	5.63	1.87	3.82	2.00	4.14	1.92	4.10	1.91	3.75	1.94
資金_1	4.70	1.22	4.26	1.75	4.84	2.14	3.47	1.74	3.53	1.78	3.33	1.67	3.51	1.62

Stmulu	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
資金_2	4.78	1.12	3.88	1.64	5.41	1.83	4.06	1.91	4.00	1.95	3.96	1.95	4.17	1.84
贏家_1	4.20	1.13	4.73	1.64	5.16	2.04	4.37	1.68	4.44	1.66	4.44	1.58	4.67	1.64
起源_1	4.51	1.33	3.76	2.09	5.10	1.96	3.88	1.93	3.94	1.91	3.80	1.93	4.04	1.74
跌_1	3.75	1.64	4.82	1.76	5.41	1.66	3.76	2.07	3.94	2.09	3.67	2.07	3.57	1.94
軍隊_1	4.41	1.12	4.16	1.95	5.55	1.88	3.85	2.04	4.54	2.04	4.04	2.00	4.12	1.81
轉變_1	4.27	1.23	4.20	1.87	5.66	1.69	4.13	1.94	3.69	1.96	3.79	1.99	3.92	1.82
返回_1	3.92	1.07	4.08	1.97	5.61	1.55	3.23	2.09	3.31	2.06	3.13	2.09	3.42	1.95
迷惘_1	4.61	1.36	4.39	1.95	4.90	2.11	3.90	1.87	3.61	1.84	3.80	1.78	3.45	1.72
逃避_1	4.41	1.06	4.94	1.62	5.40	1.93	4.35	1.85	4.12	1.85	4.27	1.89	3.96	1.89
過失_1	4.10	1.50	4.69	1.66	5.49	1.75	3.65	1.74	3.40	1.74	3.62	1.75	3.21	1.66
過失_2	4.57	1.21	4.45	1.65	5.16	1.92	3.27	1.88	3.08	1.79	3.23	1.84	2.92	1.66
過失_3	4.16	1.08	4.65	1.74	5.32	1.95	3.56	1.94	3.31	1.81	3.48	1.90	3.13	1.76
選擇_1	4.35	1.20	4.69	1.78	5.35	1.87	4.27	1.99	3.90	1.91	3.86	1.99	4.06	1.83
邀請_1	4.33	1.32	4.38	1.89	5.18	1.87	3.27	1.90	3.04	1.88	3.15	1.83	3.44	1.89
邏輯_1	4.04	1.55	4.63	1.78	5.41	2.12	3.90	1.98	3.33	1.92	3.40	1.85	3.69	1.81
邪惡_1	4.00	1.89	4.59	1.75	5.27	1.94	4.33	1.99	4.37	1.97	4.52	1.95	4.00	2.11
釋放_1	4.37	1.54	4.71	1.63	5.41	1.63	4.21	1.82	4.13	1.88	4.25	1.82	4.35	1.74
錯漏_1	4.26	1.23	4.18	1.80	5.08	2.03	4.81	1.77	4.69	1.90	4.79	1.90	4.54	1.92
鍥而不捨_1	4.16	1.42	3.67	1.49	5.00	2.14	4.27	2.13	3.84	2.13	4.10	2.07	4.27	2.03
開刀_1	4.49	1.19	4.37	1.88	5.34	1.92	3.60	1.68	3.90	1.81	3.75	1.79	3.46	1.60
開刀_2	4.22	1.38	3.80	1.94	5.16	2.15	4.65	1.96	4.96	1.87	4.87	1.86	4.60	1.91
關心_1	4.78	1.32	4.12	1.94	5.27	2.00	4.20	1.72	3.75	1.60	3.98	1.64	4.22	1.71
隨波逐流_1	4.38	1.35	4.00	1.77	5.18	1.96	3.71	1.69	3.73	1.67	3.78	1.60	3.57	1.50

Stmulis	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
離開_1	4.06	1.30	4.20	2.14	4.96	1.98	4.94	1.90	4.98	1.97	4.84	2.04	4.82	1.89
難題_1	4.31	1.03	4.08	1.79	5.49	1.65	3.75	1.74	3.52	1.65	3.63	1.77	3.35	1.53
靈魂_1	4.82	1.29	3.73	1.78	5.14	1.83	3.55	1.87	3.16	1.80	3.35	1.81	3.37	1.71
青少年_1	3.78	1.54	4.71	1.74	5.39	1.87	4.44	2.03	4.48	2.16	4.04	2.06	4.27	1.89
面頰_1	4.04	1.39	4.53	1.92	5.41	1.94	5.17	1.84	5.44	1.81	4.85	2.03	5.10	1.66
鞏固_1	4.65	1.29	4.08	1.93	5.02	1.95	3.81	1.91	3.63	1.85	3.48	1.88	3.83	1.82
頌讚_1	3.76	1.45	4.49	1.87	5.76	1.53	4.19	1.90	3.98	1.91	4.10	1.99	4.35	1.95
領袖_1	4.92	1.14	3.69	1.57	5.20	1.88	4.18	1.69	4.31	1.82	4.04	1.79	4.35	1.61
頭頭是道_1	4.49	1.19	3.75	1.94	5.22	1.78	3.52	1.73	3.35	1.75	3.52	1.71	3.71	1.75
驕傲_1	4.31	1.17	4.73	1.67	4.90	2.07	4.04	1.71	3.92	1.69	4.06	1.66	3.94	1.66
驚訝_1	4.14	1.18	4.94	1.67	5.33	1.85	4.25	1.93	4.37	1.85	4.46	1.90	4.23	1.83
高興_1	3.86	1.26	4.82	1.80	5.16	2.05	3.92	1.77	3.75	1.71	3.87	1.77	3.96	1.75
鬆馳_1	4.69	1.19	4.08	1.88	5.41	1.70	3.81	1.89	3.79	1.95	3.75	1.87	3.87	1.80
魔鬼_1	4.51	1.24	3.86	1.73	5.51	1.67	3.59	1.59	3.82	1.68	3.86	1.71	3.39	1.69

Means and standard deviations of word list in all rated features in Simplified Chinese.

Stimuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
不幸_1	4.27	1.31	4.12	1.48	4.81	1.88	3.52	1.66	3.65	1.74	4.42	1.65	2.65	1.06
享受_1	4.5	1.3	5.29	1.3	5.54	1.42	4.42	1.92	3.5	1.53	4.42	1.7	5.08	0.8
休息_1	3.72	1.28	5.96	1.17	5.54	1.7	4.85	1.76	3.77	1.84	2.92	1.72	4.69	1.12
休息_2	3.69	1.12	5.8	1.12	5.73	1.48	4.81	1.77	3.69	1.91	2.88	1.68	4.58	1.03
保持_1	4.19	1.17	4.84	1.28	5.27	1.78	4.15	1.64	2.42	1.27	2.73	1.82	4.12	0.71
保持_2	4.27	1.19	4.8	1.47	5.04	1.89	3.54	1.79	2.92	1.47	2.64	1.47	3.88	1.11
保證_1	4.12	1.37	5.28	1.21	4.92	1.96	3.88	1.86	2.77	1.82	3.2	1.63	4.23	0.71
信任_1	4.69	1.12	5.4	1.29	5.04	1.82	4.85	1.59	3.28	1.59	4.15	1.71	4.77	0.91
信心_1	4.19	1.23	5.36	1.35	5.54	1.48	4.85	1.67	3.04	1.56	4.31	1.46	4.77	0.95
信念_1	4.65	1.32	4.48	1.23	5	1.96	4.24	1.56	2.62	1.39	3.35	1.52	4.62	0.85
值得_1	4.23	1.07	5.32	1.35	5.12	1.8	4.15	1.67	2.44	1.47	3	1.57	4.76	0.66
假期_1	3.88	1.11	5.72	1.4	5.92	1.29	5.27	1.56	4.38	1.94	3.96	2.09	4.88	1.51
假期_2	3.96	1.31	5.28	1.46	5.85	1.52	5.31	1.62	3.96	1.75	3.46	2.18	5.08	1.16
分心_1	4.08	1.02	4.64	1.47	4.54	1.94	3.54	1.65	3.04	1.4	2.96	1.66	3.15	0.78
分手_1	5	1.44	4.24	1.56	5.15	1.76	3.54	1.79	3.92	1.9	5.19	1.44	2.81	0.94
分散_1	4.62	1.24	3.96	1.72	4.62	2.02	3.15	1.91	3.23	1.66	2.27	1.66	3.46	1.03
分散_2	4.31	1.01	4.32	1.46	4.42	2.06	2.77	1.68	3	1.5	2.15	1.35	3.58	0.76
刺激_1	4.58	0.95	4.8	1.55	5.19	1.92	4.42	1.6	3.31	1.91	4.19	1.79	4.23	1.42
勇敢_1	3.92	0.98	4.92	1.5	5.35	1.62	4.19	1.44	3.5	1.68	4.08	1.6	4.96	1.25
十全十美_1	4.52	1.42	3.96	1.72	4.5	2.14	3.44	1.87	2.85	1.46	3.69	2.24	5.27	1.34
受害者_1	4.81	1.2	3.76	1.61	4.48	2.18	2.96	1.84	3.46	1.9	3.56	1.64	2.69	0.74
口音_1	4.85	1.22	3.92	1.71	4.73	1.76	4.12	1.77	3.24	1.67	2.58	1.79	3.5	0.76
吃不消_1	4.88	1.24	3.76	1.92	4.5	2.12	3.38	1.86	3.12	1.58	3.62	1.7	3.27	1.04
同流合污_1	5.44	1.26	3.24	1.76	4.12	2.27	2.46	1.53	3.08	1.81	4.08	1.89	2.42	0.95
吸引_1	4.19	1.13	5	1.38	5.38	1.55	4.27	1.59	2.92	1.44	3.5	1.58	4.5	1.03

Stimuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
和平_1	4.31	1.01	4.24	1.42	4.92	2.02	3.56	1.69	3.58	1.63	3.27	1.87	5	0.94
品格_1	4.5	1.56	4	1.83	4.81	1.94	4.35	1.65	2.65	1.62	2.65	1.55	3.92	0.8
哭_1	2.73	1.43	5.16	1.4	5.77	1.63	4.2	1.85	4.54	2.04	4.04	1.8	2.81	0.8
善_1	4.12	1.18	4.64	1.6	4.81	2.1	4.19	1.67	2.96	1.56	3.77	1.95	4.96	1.28
喜出望外_1	5.23	1.07	3.36	1.89	4.5	2.1	3.69	2	3.5	1.39	4.81	1.92	5.42	0.99
器官_1	4.54	1.27	3.8	1.53	4.5	2.16	3.54	2.18	4.19	1.98	2.58	1.79	3.5	0.86
困_1	3.35	1.2	5.08	1.78	5.54	1.56	4.15	2.01	3.92	1.72	3.04	1.71	2.96	0.77
大功告成_1	4.96	1.18	4.36	1.87	5	1.92	4.12	1.83	3.15	1.59	4.77	1.68	5.35	1.32
天堂_1	4.19	1.23	4.04	1.76	4.92	1.96	3.5	2.02	3.42	1.77	3.81	1.92	4.88	1.18
天花_1	4.6	1.41	2.6	1.66	3.68	2.34	2.23	1.61	3.5	1.92	2.73	1.93	2.92	1.02
女孩_1	3.04	1.31	5.12	1.69	6	1.36	5.12	1.75	4.96	2.07	2.62	1.65	4.42	0.95
好_1	2.92	1.74	6.24	1.09	5.96	1.37	4.96	1.68	3.65	1.94	3.77	1.68	5.15	1.01
婚姻_1	4.85	1.43	4.96	1.34	5.04	1.89	4.52	2.08	3.88	1.56	3.81	1.65	4.08	1.02
守信用_1	4.35	1.29	4.6	1.47	5.31	1.54	4.85	1.69	3.27	1.89	3.96	1.75	5.04	1.04
安全_1	3.46	1.21	5.28	1.24	5.54	1.68	4.31	1.81	3.38	1.53	3	1.81	4.73	1.15
完成_1	4	1.17	5.52	1.19	5.38	1.83	4	1.98	3.38	1.58	2.81	1.55	4.46	0.86
宗教_1	4.77	1.34	3.76	1.59	4.88	2.07	3.27	2.05	3.54	1.96	2.88	1.95	4	0.8
宗教_2	4.85	1.22	3.76	1.71	4.54	2.12	3.04	1.93	3.54	1.86	2.62	1.65	4.04	0.66
官感_1	5.32	1.25	2.71	1.49	3.92	2.1	3.16	1.65	2.6	1.32	2.71	1.9	3.75	0.9
害怕_1	3.31	1.01	5.28	1.21	5.35	1.65	3.69	1.69	3.85	1.74	4.28	1.72	3.04	1.15
家庭_1	3.69	1.05	5.64	1.32	5.88	1.56	5.38	1.68	4.42	1.88	3.96	1.75	4.88	1.14
寓言_1	4	1.1	3.2	1.78	4.12	1.99	2.69	1.57	3.31	1.67	2.42	1.42	4.04	0.6
尖沙咀_1	5.76	1.61	3.72	1.65	4.85	2.19	2.85	1.74	4.88	1.93	2.31	1.78	4.12	0.65
崇尚_1	4.58	1.03	3.76	1.71	4.23	2.1	3.69	1.81	3.04	1.48	3.42	1.72	4.69	1.29
崇拜_1	4.35	0.94	4.68	1.63	4.96	1.73	4.12	1.9	3.12	1.51	4.19	1.77	4.54	1.14

Stimuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
工作_1	3.62	1.24	5.6	1.61	6.27	1.04	5.42	1.6	4.15	1.95	2.81	1.74	3.85	1.16
平凡_1	4.12	1.24	4.8	1.41	4.73	2.01	3.85	1.76	3.15	1.52	2.88	1.77	3.73	0.87
平方米_1	4.62	1.1	4.08	2.16	4.27	2.11	3.23	2.18	4.31	2.24	1.88	1.56	4	0.8
建立_1	4.04	1.1	4.4	1.85	5	2.04	3.69	1.74	2.58	1.42	2.19	1.58	3.96	0.84
微笑_1	3.54	1.1	5.28	1.21	5.68	1.55	4.77	1.61	4.54	1.88	3.92	1.47	5.04	0.72
心_1	3.62	1.33	5.64	1.22	5.62	1.75	4.35	1.9	3.92	2.02	3.23	1.68	4.19	0.94
忠心_1	4.42	1.39	4.28	1.51	4.73	1.78	4.23	1.63	3.27	1.37	3.38	1.7	4.73	1.08
想法_1	4.15	0.83	5.36	1.29	5.62	1.42	4.69	1.44	2.81	1.55	1.92	1.41	3.85	0.73
想法_2	3.85	1.19	5.24	1.48	5.31	1.74	4.35	1.79	2.5	1.48	2.46	1.53	3.96	0.66
感激_1	4.08	1.35	5.24	1.3	5.5	1.27	4.35	1.55	3.65	1.62	4.85	1.52	5	1.06
慾望_1	5.04	1.31	4.32	1.49	5.31	1.46	4.32	1.89	2.92	1.44	3.92	1.62	3.5	1.17
成功_1	4.27	1.48	5.32	1.31	5.77	1.21	4.73	1.54	3.54	1.65	4.44	1.5	5.27	1.28
成功_2	4.15	1.05	5.2	1.35	5.65	1.44	4.96	1.54	3.69	1.78	4.88	0.95	5.12	1.42
成就_1	4.65	1.06	4.84	1.6	5.15	1.87	4.19	1.52	3.35	1.67	4.12	1.45	4.88	1.37
打_1	3.04	1.31	5.44	1.42	5.54	1.45	3.85	1.83	4.08	2.17	3.35	1.77	2.85	0.92
拿_1	3.23	1.42	5.52	1.39	5.5	1.86	3.38	2.08	3.88	1.95	2.35	1.65	3.92	0.69
掉_1	3.27	1.28	4.64	2.1	4.5	2.12	2.96	1.71	3.81	2	2.19	1.44	3.24	0.97
政治家_1	5	1.2	3.52	1.45	4.46	1.98	2.62	1.7	3.96	1.75	2.23	1.34	3.31	0.93
效果_1	4.27	1.22	5.12	1.51	5.08	2	3.46	1.88	3.19	1.41	2.54	1.75	3.92	0.69
教堂_1	4.92	1.38	3.72	1.86	4.69	2.09	2.8	2	5.15	1.95	2.85	1.83	4.35	1.2
文化_1	4.42	1.47	4.84	1.31	4.92	2.04	4.5	1.7	3.15	1.69	2.54	1.58	4.38	1.44
新年_1	3.15	1.01	5.24	1.56	5.35	1.77	4.92	1.79	4.31	2	3.62	2	4.81	1.33
旅程_1	4.88	1.17	4.48	1.53	5.31	1.74	4.62	1.81	4.27	1.76	3.04	1.71	4.38	1.1
早上_1	3.04	1	5.6	1.85	5.88	1.61	4.38	1.96	4.54	2.21	2.5	1.61	4.04	1
明白_1	3.5	1.07	5.56	1.58	5.85	1.49	4.69	1.49	2.92	1.49	2.96	1.71	4.08	0.93

Stimuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
晚上_1	3.31	1.72	5.6	1.58	5.73	1.64	4.54	2.02	4.5	2.06	2.04	1.31	4.31	0.97
晚餐_1	3.23	0.99	5.92	1.22	5.54	1.77	4.68	1.91	4.73	1.91	2.92	1.79	4.35	1.06
月亮_1	2.73	1.04	4.88	1.48	5.12	1.9	3.08	1.81	5.15	2.11	2.15	1.32	4.31	0.68
朋友_1	3.62	1.17	5.96	1.34	6.27	1.08	5.35	1.32	4.73	1.76	3.85	1.93	5.2	1.08
朋友_2	3.62	1.06	5.96	1.34	5.73	1.73	5.35	1.55	4.65	1.79	3.85	1.69	5.08	1.23
朱古力_1	4.08	1.35	4.12	2.01	4.96	1.75	3.08	1.57	5.42	1.79	2.54	1.48	4.62	1.33
森林_1	3.62	0.98	3.96	1.81	4.58	2.14	2.64	1.75	5	1.96	2.24	1.79	4.04	1.04
武器_1	4.23	1.07	3.68	1.63	4.62	2.16	2.92	1.96	4.58	2.14	2.69	1.67	3.38	1.24
汽水罐_1	4.31	1.49	3.2	2	4.27	2.16	2.73	1.76	5.31	2	1.73	1.25	3.88	0.86
沙漠_1	4.19	0.9	3.36	1.89	4.42	2.19	2.54	1.68	5.04	1.95	2.19	1.39	3.65	0.85
法律_1	4.81	1.27	4.36	1.52	5	1.77	3.54	2.04	3.85	1.8	2.54	1.92	3.73	0.6
法律_2	4.65	1.35	4.16	1.46	4.65	2	3.77	1.9	3.54	1.94	2.42	1.72	3.92	0.84
海_1	3.5	1.14	4.88	1.62	5.38	1.63	3.6	2.25	5.35	1.94	3	1.9	4.12	0.65
添_1	3.73	0.92	3.88	1.92	4.27	2.03	3.31	1.78	3.35	1.79	2	1.36	3.96	0.66
湖_1	3.54	0.95	3.92	1.63	4.65	1.96	2.62	1.75	5.23	1.88	2.12	1.56	4.04	0.66
熟悉_1	4.15	1.01	5.72	1.02	5.58	1.65	4.31	1.83	2.92	1.49	3.12	1.72	4.35	0.85
熟能生巧_1	4.58	0.95	4.24	1.74	4.81	1.9	4.12	1.45	2.65	1.41	3.15	1.93	4.58	1.14
牛奶_1	3.15	1.32	5.08	1.75	5.69	1.72	4	1.88	5.35	1.94	2.35	1.92	4.12	0.86
狡猾_1	4.38	1.1	4.16	1.75	5.08	1.65	3.2	1.71	3.27	1.54	4.12	1.7	2.85	0.83
猜疑_1	4.96	1.08	4.13	1.83	4.92	1.76	3.69	1.74	3.08	1.47	3.42	1.65	2.81	0.85
玩_1	3	1.44	6.12	0.93	5.92	1.32	4.77	1.84	3.96	1.71	3.46	2	4.92	1.2
甜_1	3.04	1.43	5.44	1.36	5.77	1.37	3.92	1.62	4.35	1.98	3.38	1.81	4.77	0.71
生日_1	3.12	0.99	5.63	1.21	5.85	1.35	4.85	1.35	4.04	1.97	3.81	2.12	4.88	1.11
男_1	2.96	1.08	5.8	1.44	5.92	1.32	4.38	2	4.81	2.12	2.5	1.73	3.69	0.79
疲倦_1	4.23	0.91	4.92	1.53	5.54	1.5	4.46	1.79	3.73	1.99	3.73	1.85	2.77	0.86

Stimuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
病_1	3.27	1.31	5.36	1.44	5.23	1.92	3.92	1.67	4.08	2.12	3.27	1.82	2.62	1.2
病人_1	3.69	0.97	4.52	1.56	4.92	1.92	3.77	1.95	4.81	1.79	3.38	2.08	3	0.89
病人_2	3.5	0.81	4.04	1.7	4.81	2.08	3.73	1.99	4.31	2	2.62	1.65	2.96	0.77
痛苦_1	4.65	1.23	5.12	1.59	5.46	1.42	4	1.35	3.38	1.94	4.65	1.6	2.12	0.82
相反_1	4.19	1.13	4.84	1.6	5.38	1.55	3.27	1.99	3	1.65	2.38	1.53	3.65	0.56
相配_1	4.65	1.38	3.76	1.67	4.38	2.32	3.65	1.98	2.81	1.41	2.54	1.73	4.04	0.72
眼睛_1	3.19	1.39	5.4	1.35	5.77	1.42	4.04	1.91	5.36	1.93	2.35	1.47	4.15	0.73
知法犯法_1	5.31	1.52	3.24	1.9	4.27	2.13	2.54	1.58	3.27	1.51	3.5	1.73	2.69	1.19
禁止_1	3.85	1.12	4.48	1.58	5.04	1.91	2.88	1.67	3.19	1.92	3.31	1.69	3.46	0.95
程度_1	4.23	1.11	4.52	1.71	5.46	1.56	3.08	2.06	2.36	1.25	2.31	1.54	3.92	0.63
程度_2	4.4	1.04	4.8	1.55	4.92	2	3.27	1.97	2.54	1.42	2.04	1.14	3.81	0.9
笑_1	3.12	1.24	6.04	0.93	6.19	0.94	4.73	1.89	4.65	2.04	4.58	1.84	5.23	0.82
笑柄_1	4.73	1.37	3.8	1.61	3.96	2.09	2.96	1.34	3.27	1.31	3.46	1.68	3.12	0.82
笑柄_2	4.69	1.16	3.64	1.6	4.04	2.14	2.92	1.52	3.15	1.64	3.23	1.53	2.85	0.88
精明_1	4.81	1.27	4.64	1.32	5.23	1.58	4	1.88	3.04	1.51	3.5	1.79	4.38	1.17
精疲力竭_1	4.96	1.15	4.16	1.6	4.96	1.8	3.77	1.68	3.54	1.94	3.88	1.97	2.92	1.32
缺口_1	4.46	1.3	3.64	1.66	4.65	1.9	2.92	1.65	3.5	1.84	2.15	1.32	3.62	1.1
羞愧_1	4.35	0.98	3.88	1.69	4.81	1.86	3.69	2	3.44	1.42	3.92	1.55	2.85	0.73
背叛_1	5	1.2	4.2	1.53	4.77	2.05	3.38	1.63	3.35	1.52	4.85	1.62	2.5	1.17
能幹_1	4.04	1.15	5.32	1.31	5.5	1.48	4.81	1.65	3.54	1.96	3.23	1.61	4.88	0.95
自相矛盾_1	4.92	1.29	3.28	1.62	4.73	1.8	2.77	1.5	3	1.65	3.23	1.53	3.12	1.03
自誇_1	4.46	1.1	3.92	1.93	4.46	1.88	3.27	1.78	3.15	1.43	3.46	1.77	3.15	0.78
良心_1	4.58	1.27	5.08	1.41	5.19	1.83	4.58	1.55	2.96	1.59	3.92	1.65	4.84	1.03
良心_2	4.54	1.21	4.88	1.3	5.19	1.63	4.36	1.82	2.92	1.55	3.65	1.81	4.69	1.29
英雄_1	4	1.3	4.32	1.75	4.96	1.95	3.42	1.96	4	1.85	3.77	1.66	5.27	1.12

Stimuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
藉口_1	4.65	1.2	4.64	1.22	4.77	1.82	3.77	1.77	2.92	1.49	2.81	1.52	3.46	1.03
藉口_2	4.5	1.03	4.8	1.61	5.04	1.73	3.58	1.58	3.23	1.63	2.88	1.8	3.15	1.08
讚_1	4.5	1.68	5.4	1.29	4.96	2.01	4.73	1.64	3.4	1.66	4.62	1.58	4.96	0.87
起源_1	4.58	1.24	3.71	1.71	4.23	2.05	3.15	1.91	2.5	1.56	2.08	1.49	3.88	0.88
跌_1	3.46	1.24	4.2	1.66	4.85	1.91	3.35	1.94	3.81	2.14	2.62	1.36	2.88	0.82
返回_1	3.96	1.34	4.56	1.87	5.08	1.72	3.19	1.88	3.36	1.89	2.12	1.4	3.88	0.77
迷惘_1	5.19	1.55	4.04	1.37	4.77	1.73	3.73	1.82	3.15	1.35	4.04	1.93	2.77	0.86
逃避_1	4.69	1.32	4.64	1.35	5.12	1.68	3.73	1.82	3.08	1.67	3.42	1.68	2.85	0.67
青少年_1	4.12	0.59	4.04	1.81	4.81	1.96	3.69	1.89	4.46	1.92	2.46	1.73	4.27	1
魔鬼_1	4.23	1.11	4.08	1.96	4.58	2	3.31	1.46	3.65	2.04	4.08	1.93	2.15	0.78
过失_1	4.42	1.47	4.12	1.83	4.92	1.67	3.8	1.71	2.77	1.56	3.31	1.69	2.73	0.96
仪式_1	4.62	1.2	3.44	1.64	4.38	2	2.88	1.73	3.92	1.91	2.54	1.77	3.73	0.67
协会_1	5.12	1.18	3.24	1.88	4.28	2.01	3.2	1.94	3.62	1.7	1.92	1.29	3.81	1.13
员工_1	4.88	1.37	4.32	1.63	5.08	1.7	4.33	1.93	4.04	2.07	2.04	1.46	4	0.75
喜爱_1	3.77	1.14	5.28	1.37	5.88	1.24	4.64	1.32	3.54	1.5	4.5	1.56	5.42	0.95
报应_1	4.5	1.1	4.32	1.75	4.92	1.8	3.12	1.61	2.88	1.48	4.19	1.9	2.73	0.96
小麦_1	3.92	1.16	2.92	1.75	4.46	2.32	2.54	1.92	5.12	2.03	2.12	1.75	3.65	0.69
工厂_1	3.58	1.14	3.8	1.83	4.62	2.16	2.68	1.8	4.88	2.05	1.88	1.31	3.76	0.78
条件_1	4.08	1.16	4.68	1.65	5.04	1.82	3.69	1.78	2.85	1.57	2.08	1.49	3.77	0.71
气候_1	4.5	0.95	4.32	1.68	5.23	2.05	3.2	1.78	3.35	1.62	2.35	1.55	3.92	0.63
减少_1	3.35	1.06	5	1.58	5.15	1.91	3.81	2	3.6	1.98	2.62	1.77	3.42	0.95
争取_1	4.12	0.86	5.4	1.29	5.5	1.48	4.54	1.73	2.85	1.46	3.69	1.64	4.31	0.88
笑声_1	3.64	1.04	4.88	1.67	5.65	1.57	5.15	1.52	4.62	1.9	4	1.58	4.69	1.05
细菌_1	4.04	1.37	4.2	1.85	4.8	2.04	3.88	1.9	3.77	1.97	2.54	1.82	2.88	0.95

Stimuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
谋杀_1	4.84	1.07	3.28	1.86	4.04	2.25	2.27	1.69	3.81	1.86	4	1.96	2.38	1.68
财富_1	4.88	1.18	4.76	1.48	5.62	1.36	4.69	1.78	4.38	1.63	3.65	1.83	5.04	1.18
资金_1	5	1.36	4.8	1.71	5.54	1.56	4.35	2	3.69	1.91	2.65	1.9	4.5	0.86
开刀_1	4.12	0.91	3.48	1.83	4.42	2.19	2.54	1.33	4.44	2.02	3.58	1.94	3.12	1.37
一事无成_1	5.15	0.83	3.56	1.58	4.65	2.02	3.27	1.97	2.92	1.35	4.38	1.79	2.38	1.02
上当_1	4.31	1.19	4.52	1.81	5	1.88	3.35	1.72	2.77	1.63	3.68	1.95	3.04	0.87
人间_1	4.54	1.27	3.76	1.51	4.73	1.85	3.58	1.6	3.42	1.84	2.65	1.38	3.81	0.57
低语_1	4.58	1.65	3.04	1.77	3.69	2.19	2.88	1.84	3.12	1.96	2.12	1.42	3.69	0.55
来源_1	4.58	1.1	4.08	1.87	4.65	1.98	2.88	1.86	2.65	1.55	2.23	1.63	3.81	0.63
促进_1	4.77	0.99	4.6	1.63	5.08	1.72	3.8	1.91	2.69	1.59	2.88	1.58	4.77	0.71
保护_1	3.96	1.31	4.92	1.58	5	2.04	3.81	1.83	3.27	1.71	3.35	1.47	4.27	0.92
个人_1	3.72	1.17	4.68	1.57	5.19	1.72	4.04	2.03	3.23	1.75	2.12	1.31	3.85	0.54
假设_1	4.15	1.05	4.56	1.58	5.04	1.66	3.73	1.95	2.69	1.89	2.31	1.62	3.81	0.63
伤口_1	3.62	1.2	4.6	1.47	5.31	1.69	3.08	1.76	4.12	2.14	3.58	2.08	3.19	1.2
伤害_1	4.23	1.03	4.92	1.41	4.96	1.89	3.69	1.69	3.69	1.78	4	1.83	2.73	1.04
优点_1	3.77	0.99	4.96	1.67	5.31	1.67	4.27	1.66	3.23	1.75	3.88	1.86	4.92	0.89
动力_1	4.42	1.14	5.12	1.33	5.54	1.65	4.62	1.47	3.31	1.74	3.19	1.39	4.73	0.96
动机_1	4.96	0.92	4.24	1.54	4.69	1.93	3.5	1.82	2.62	1.58	2.96	1.73	3.73	0.6
动物园_1	3.62	1.24	3.88	1.62	4.69	2.11	2.81	1.74	5.46	1.77	2.46	1.65	4.23	0.86
胜利者_1	4.35	0.94	3.88	1.74	4.77	1.8	3.96	1.66	3.81	1.65	4	1.65	4.85	1.16
勤学_1	4.2	0.76	3.63	1.84	4.16	2.13	4.13	1.96	3.42	1.79	3.16	1.77	4.68	1.11
危机_1	4.69	1.26	4.04	1.68	5.23	1.66	3.69	1.64	3.12	1.56	4.08	1.72	2.73	0.96
危险_1	3.38	1.02	5.32	1.22	4.96	1.93	3.64	1.58	3.42	1.72	4.35	1.67	2.38	0.9
可爱_1	3.35	0.89	5.58	1.38	5.88	1.14	4.12	1.73	3.96	1.78	4.5	1.9	5.23	1.07
吸烟_1	4	1.17	4	2.12	4.77	2.08	2.38	1.55	4.92	2.15	2.73	1.71	2.58	1.17

Stimuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
命运_1	4.77	1.31	4.6	1.44	5	1.79	4.16	1.97	3.12	1.8	3.38	1.88	3.85	0.67
品学兼优_1	4.65	0.75	3.56	1.71	4.4	2.2	4.4	1.78	3.5	1.92	3.46	1.75	5.08	1.16
问路_1	3.81	0.9	4.6	1.66	4.96	1.89	3.85	1.67	4.23	1.82	2.15	1.46	4	0.85
单纯_1	4.58	1.17	4.64	1.44	4.92	1.83	3.92	1.7	3.12	1.53	2.73	1.56	4.31	0.79
吓怕_1	3.58	0.99	3.72	1.65	4.42	1.94	3.5	1.75	3.65	1.98	4	1.98	2.92	0.8
坏_1	3	1.02	5.44	1.64	5.23	2.05	3.54	1.79	3.35	1.87	4	1.96	2.69	1.23
梦_1	3.5	1.27	5.24	1.3	5.15	1.8	4.19	1.92	3.77	1.9	3.12	1.8	4.27	0.87
大发雷霆_1	4.81	1.36	3.6	1.71	4.54	2.2	3.27	2.01	3.96	1.84	4.85	1.85	2.62	1.24
天线_1	4.31	0.97	3.76	1.94	4.35	2.37	2.46	1.88	5.04	2.05	1.77	1.34	3.73	0.92
太阳_1	2.81	1.27	5.32	1.6	5.35	1.83	3.69	2.22	5.42	1.9	2.77	1.5	4.77	1.07
失败_1	4	1.02	5.08	1.22	5.12	1.82	3.88	1.68	3.31	1.83	4.04	1.59	2.69	0.88
学生_1	3.31	1.23	4.88	1.88	5.46	1.82	4.69	2	4.96	1.99	2.08	1.47	4.08	0.69
安乐_1	4.73	1.34	3.68	1.7	4.69	1.83	3.69	1.67	3.35	1.77	3.96	1.75	4.81	0.85
家喻户晓_1	4.96	1.08	3.68	1.84	4.46	2.08	2.69	1.89	2.92	1.72	3.31	1.93	4.42	1.06
家庭主妇_1	4.77	1.5	4.12	1.81	4.96	1.84	3.04	1.93	4.5	1.9	2.38	1.6	4	0.8
实至名归_1	5.31	1.32	3.52	1.81	4.12	1.95	3.28	1.72	2.46	1.27	3.35	1.77	4.6	1.08
宝藏_1	4.19	1.17	3.21	1.74	4.31	2.17	2.54	1.73	4.42	1.94	3.31	1.89	5.08	0.93
专注_1	4.65	0.98	4.36	1.5	4.77	1.9	4.23	1.8	3.04	1.61	3.08	1.74	4.69	0.93
对手_1	4.15	1.22	4.36	1.63	5.46	1.45	3.54	1.94	3.73	1.66	2.85	1.74	3.5	0.81
尴尬_1	4.92	1.16	4.76	1.54	5.27	1.56	3.54	1.45	3.31	1.52	3.77	1.82	3.04	0.77
帐单_1	5.19	1.3	5.28	1.4	5.73	1.4	4.04	1.87	4.31	2.04	2.88	1.75	3.65	0.75
帐篷_1	4.5	1.14	3.52	1.9	4.19	2.4	2.44	1.66	4.69	2.02	1.85	1.35	4.08	0.93
强壮_1	3.85	1.01	4.76	1.61	5.5	1.48	4.28	1.57	3.88	1.73	3.58	1.96	4.6	0.71
强迫_1	4.65	1.09	4.92	1.12	4.92	1.92	3.73	1.56	3.19	1.58	4.04	1.82	2.92	1.12
循循善诱_1	5.04	1.37	3.08	1.67	3.81	2.06	3.29	1.52	3.12	1.61	3.29	1.76	4.6	1.26

Stimuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
忘记_1	3.54	1.36	5.36	1.47	5.5	1.58	3.81	1.74	3.12	1.48	3	1.62	3.5	0.95
快乐_1	3.65	1.29	5.56	1.23	5.77	1.45	4.96	1.57	3.88	2.03	4.88	1.45	5.23	1.18
恢复_1	4.38	1.1	4.6	1.32	5	1.96	3.65	1.9	3.15	1.62	2.88	1.7	4.31	0.97
情况_1	4.08	1.09	5.2	1.5	5.23	1.63	3.38	2	2.85	1.71	2.12	1.53	3.96	0.53
恶梦_1	3.96	1.08	4.16	1.77	4.73	2.03	3.31	1.41	3.73	1.97	3.88	1.86	2.42	1.1
意图_1	4.65	1.35	4.2	1.71	4.85	1.71	3.96	1.84	2.58	1.84	2.81	1.7	3.58	0.76
爱意_1	5	1.29	4.24	1.67	5.12	1.51	4.42	1.42	3.54	1.68	4.54	1.42	5.12	1.18
感谢_1	3.42	0.99	5.52	1.12	5.73	1.4	4.42	1.65	3.88	1.66	4	1.96	4.96	1.22
庆祝_1	4.04	1.08	5.24	1.2	5.35	1.87	4.32	1.73	3.96	1.79	4	1.83	5.12	1.21
忧虑_1	4.77	1.07	4.42	1.41	5.08	1.92	3.69	1.81	2.88	1.48	4.28	1.65	2.88	0.71
懦弱胆小_1	5.12	1.11	3.67	1.63	4.28	2.09	3.28	1.67	3.42	1.5	3.68	1.75	2.96	1.31
怀疑_1	4.42	1.47	5.08	1.38	5.56	1.45	3.85	1.8	2.81	1.6	4.04	1.59	2.88	0.77
战争_1	4.42	1.06	4.32	1.77	4.65	2.02	2.96	1.86	4.46	1.82	4	1.88	2.73	1.31
投诉_1	4.92	1.47	4.56	1.42	5.19	1.67	3.54	1.56	3.62	1.68	3.54	1.63	3.12	0.82
抵达_1	4.62	0.94	4.16	1.57	5.12	1.7	3.24	2.01	3.27	1.78	2.08	1.6	4.08	0.69
抛弃_1	4.64	1.6	4.2	1.78	4.81	2	3.23	1.77	3.35	1.55	4.31	1.52	2.58	0.76
拍摄_1	4.81	0.94	4.48	1.78	4.81	1.88	3.38	1.81	4.15	1.85	2.04	1.34	4.04	0.6
损伤_1	4.5	1.14	4.48	1.45	4.62	2.02	3.8	1.66	3.62	1.58	3.12	1.61	2.88	0.91
损失_1	4.58	1.24	4.67	1.4	4.73	1.97	3.58	1.68	3.15	1.64	3.31	1.54	2.92	0.69
摆架子_1	4.65	1.23	3.56	1.76	4.35	2.06	3.08	1.62	3.23	1.53	3.31	1.67	2.85	0.92
攻击_1	4.27	0.92	4.44	1.64	4.77	1.92	3.58	1.9	3.5	1.63	4.35	1.74	2.96	0.96
断_1	3.85	1.26	4.84	1.68	4.65	1.98	2.88	1.58	3.69	1.76	2.38	1.53	3.5	0.86
会议_1	4.5	1.1	4.68	1.7	5.15	1.69	4.54	1.82	4.27	1.95	2.42	1.75	3.62	0.64
极品_1	5.5	1.17	4.36	1.82	5.08	2.1	3.81	1.86	3.08	1.62	4.04	1.82	4.08	1.57
乐_1	3.69	1.09	5.56	1.33	5.62	1.75	4.62	1.68	4.08	1.92	3.77	1.82	4.69	1.05

Stimuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
乐天_1	4.92	1.35	3.76	1.64	4.69	1.87	4.04	1.56	3.16	1.6	3.96	1.64	5.08	1
乐於助人_1	3.92	1.06	4.04	1.65	4.77	1.95	4.48	1.73	3.38	1.7	4.19	1.74	5.12	0.99
树木_1	3.35	1.23	4.08	1.93	4.42	2.28	3.31	1.98	5.04	1.99	2.04	1.15	4.27	0.78
横额_1	5.15	1.87	2.14	1.35	3.36	2.42	2.04	1.55	3	1.64	2.23	1.54	3.67	0.97
欢迎_1	3.69	0.93	5.16	1.46	5.31	1.67	4.12	1.86	3.62	1.6	3.62	1.7	4.77	0.76
毁灭_1	4.81	1.02	3.96	1.72	4.38	2.08	2.65	1.77	2.88	1.28	4.12	1.77	2.38	1.3
母亲_1	3.23	1.56	5.44	1.83	5.69	1.83	5.27	1.97	4.8	2.33	4.35	2.08	5.27	1.46
水深火热_1	5	1.1	3.6	1.94	3.85	2.2	2.54	1.75	3.12	1.63	4.31	1.78	2.38	1.06
沉闷_1	4.77	1.14	3.84	1.55	5	1.62	3.31	1.74	3.35	1.35	3.38	1.75	2.73	0.67
没趣_1	4.5	1.14	3.76	1.88	4.54	1.98	3.12	1.93	3.12	1.9	3.5	1.75	2.96	0.72
沮丧_1	4.54	1.21	4.48	1.39	4.88	1.95	3.72	1.49	3.5	1.45	4.62	1.6	2.46	0.86
油画_1	4.31	1.09	3.36	1.85	4.38	2.35	2.73	1.85	5.12	1.82	2.08	1.44	4.08	0.76
活动_1	3.77	1.24	4.92	1.66	5.62	1.36	4.12	1.81	3.42	1.72	2.62	1.6	4	0.69
活泼_1	3.85	1.19	5	1.55	5.54	1.53	4.27	1.71	3.46	1.84	3.54	1.79	4.92	0.98
海滩_1	3.81	1.23	4.24	1.54	5.15	1.83	3.58	1.84	5.35	2	2.96	1.8	4.46	0.99
混乱_1	4.35	1.29	4.52	1.73	4.96	1.78	3.5	1.61	3.42	1.7	3.04	1.68	3.12	1.07
满足_1	4.04	0.92	5.12	1.45	5.69	1.29	4.69	1.38	3.19	1.58	4.27	1.76	4.85	1.29
漠视_1	5.15	1.35	3.6	1.8	4.5	1.94	2.88	1.61	3	1.39	3.56	1.87	3	1.02
激励_1	4.73	0.96	4.61	1.73	5.12	1.8	4.5	1.5	3.08	1.41	3.5	1.7	4.58	1.53
滥用_1	5.23	1.18	4	1.53	4.58	1.88	3.12	1.63	2.77	1.42	3.35	1.5	2.88	0.71
炸弹_1	4.15	1.22	3.24	1.74	4.27	2.13	2.42	1.75	4.92	1.94	3.42	1.96	2.73	1.12
无动於衷_1	5.04	1.4	3.84	1.77	4.27	1.82	2.73	1.4	3.04	1.48	3.12	1.7	3.04	0.96
无忧无虑_1	5	1.13	4.08	1.55	4.88	1.75	3.44	1.71	3.19	1.44	4.42	1.65	4.81	1.1
焦虑_1	4.8	1.22	4.4	1.55	4.85	1.74	4.12	1.48	3.27	1.78	4.27	1.51	2.88	1.07
热情_1	4.31	1.12	4.88	1.33	5.42	1.77	4.77	1.45	3.58	1.84	4.35	1.67	5.04	1.25

Stimuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
烧_1	3.5	1.33	4.96	1.57	4.65	2.15	3.2	1.85	4.04	1.87	3.27	1.8	3.54	0.9
争执_1	4.73	1.19	4.52	1.36	4.85	1.87	4.35	1.62	3.85	1.69	3.81	1.92	2.92	0.69
父亲_1	3.04	1.48	5.32	1.63	5.77	1.61	5.42	1.94	5.04	2.05	3.77	1.97	5.04	0.96
画蛇添足_1	4.69	1.05	3.32	1.7	4.19	2.3	2.85	1.69	3.38	1.75	2.96	1.78	2.96	0.92
发脾气_1	3.65	1.09	5.28	1.43	5.42	1.7	4.19	1.67	4.4	1.63	4.42	1.84	2.85	0.97
发表_1	4.65	1.26	4.48	1.92	5.15	1.71	4.23	1.95	3	1.9	2.23	1.37	3.92	0.89
百万_1	4.08	1.38	4.28	1.77	5.15	1.83	3.69	1.89	4.08	1.98	2.77	1.84	4.5	1.17
监狱_1	4	1.33	3.6	2	3.96	2.31	2.12	1.63	4.62	2	3.5	2.02	2.42	0.86
礼物_1	3.58	1.17	5.68	1.18	5.73	1.31	4.5	1.82	4.92	1.79	3.62	2.04	4.88	0.99
穷_1	3.92	1.35	5.4	1.26	5.38	1.81	4.19	1.77	3.65	1.57	3.5	1.94	2.77	1.07
绊脚石_1	5.08	1.13	3.32	1.65	4.31	2.02	2.92	1.63	3.27	1.64	2.96	1.78	2.65	1.13
绝望_1	4.88	1.42	4.36	1.52	5.31	1.62	3.04	1.62	3.35	1.77	5	1.79	2.31	1.12
给予_1	4.5	1.3	4.4	1.63	4.65	1.83	4	1.7	3.23	1.77	2.84	1.43	4.35	0.94
编织_1	4.42	1.17	3.32	1.82	4.19	1.96	3.23	1.66	3.81	2.02	1.81	1.3	3.96	0.92
老师_1	3.56	1.45	5	1.68	5.23	2.03	4.62	2.08	4.65	1.81	3.23	1.68	4.62	0.94
声调_1	4	1.26	3.76	1.56	4.96	2.03	3.38	1.9	3.23	1.84	1.84	1.4	3.92	0.8
自强不息_1	5.08	1.15	3.68	1.84	4.46	1.88	4.38	1.75	2.96	1.59	4	1.9	4.92	1.15
自言自语_1	4.31	1.09	4.08	1.91	4.96	1.91	4.04	1.73	3.77	1.7	3.12	1.84	3.54	0.86
自讨没趣_1	5.19	1.13	3.64	1.85	4.16	2.06	3	1.44	2.76	1.39	3.54	1.86	2.85	0.73
兴奋_1	3.69	0.88	5.5	1.22	5.69	1.44	4.8	1.29	3.96	1.82	4.69	1.44	5.12	0.99
兴致勃勃_1	4.42	0.76	3.76	1.79	4.54	2.06	4.46	1.75	3.56	1.73	4.27	1.73	4.92	1.16
兴趣_1	4.19	1.13	5.4	1.08	5.62	1.63	4.85	1.32	3.23	1.58	3.46	1.77	4.77	0.95
舒适_1	4.5	1.27	4.76	1.39	5.19	1.83	3.96	1.64	3.54	1.9	3.65	1.62	4.88	0.99
花园_1	3.38	1.13	4.48	1.87	5.62	1.58	3.5	1.84	4.85	2.17	2.62	1.5	4.19	0.94
装模作样_1	5.04	1.18	3.72	1.65	4.54	2.02	3.32	1.6	3.27	1.43	3.69	1.62	3.19	0.98

Stimuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
見證_1	4.85	1.38	4	1.41	4.4	2.14	3.38	1.88	3	1.47	2.64	1.7	3.81	0.75
讨厌_1	3.42	1.1	5.24	1.51	5.42	1.55	3.69	1.72	3.23	1.39	4.23	1.77	2.65	0.89
记得_1	3.46	1.07	5.24	1.74	5.54	1.65	4.12	1.77	3.04	1.73	2.77	1.73	3.85	0.97
记忆_1	3.73	1.04	4.92	1.41	5.5	1.48	4.08	1.68	3.58	1.84	3.19	1.72	4.08	0.84
诊所_1	4.31	1.41	4.24	1.59	4.92	2.02	3.23	1.82	4.65	2.08	2.42	1.65	3.46	0.76
诧异_1	5.08	1.23	4.04	1.7	4.5	1.84	3.96	1.91	3.62	1.75	4.04	1.86	3.5	0.76
语言_1	4.04	1.15	4.56	1.87	5.62	1.6	4.84	1.72	3.54	1.82	2.23	1.34	4.04	0.87
误会_1	4.38	1.36	4.96	1.37	5.27	1.76	3.54	1.77	3.04	1.59	3.54	1.84	3.08	1.02
谎话_1	3.81	1.13	4.44	1.56	5.15	1.67	3.35	1.6	3.27	1.69	4.31	1.85	2.54	0.9
讚赏_1	4.15	1.32	4.64	1.41	4.88	1.75	4.19	1.58	3.35	1.65	4.38	1.39	4.85	1.26
丰足_1	4.64	1.29	3.17	1.55	4.4	2.2	3.48	1.94	3.28	1.79	3.12	1.76	4.65	0.94
负责_1	4.19	1.2	5.04	1.57	5.62	1.42	4.54	1.56	2.46	1.33	3.58	1.58	4.04	0.92
贪官_1	5.27	1.4	3.8	1.76	4.77	2.1	3	2.06	4.08	1.74	4.12	2.05	2.35	1.02
赢家_1	4.46	1.45	3.88	1.33	4.85	1.91	3.64	1.58	4.12	1.53	3.15	1.76	4.96	0.92
军队_1	4.19	1.36	4	1.78	4.69	2.17	3.19	2.28	4.85	1.87	2.62	1.55	3.38	0.85
转变_1	4.73	1.12	4.72	1.28	5.08	1.76	3.56	1.8	2.81	1.44	2.65	1.52	3.92	0.74
选择_1	4.35	1.2	5.44	1.47	5.58	1.33	4.6	1.89	3.23	1.84	2.38	1.5	3.77	0.86
邀请_1	4.23	1.31	4.84	1.49	5	1.83	3.84	1.95	3.27	1.64	3.15	1.69	4.31	0.79
逻辑_1	5	1.26	4.56	1.61	5.44	1.66	3.92	2.04	2.62	1.81	2.04	1.46	4.28	1.1
邪恶_1	4.62	1.47	4.04	1.65	4.58	2.02	2.58	1.6	3.46	1.61	4.12	1.68	2.12	0.91
释放_1	4.69	1.09	3.92	1.53	4.65	1.92	3.04	1.54	2.85	1.49	3.31	1.44	4.23	1.03
错漏_1	4.85	1.19	3.6	1.78	4.31	2.04	3.8	2	2.85	1.38	2.81	1.5	2.62	0.9
锲而不捨_1	5.38	1.13	3.68	1.91	4.2	1.98	4.48	1.78	3.12	1.48	4.46	1.74	5.04	1.24
关心_1	3.81	1.17	5.32	1.25	5.62	1.58	4.77	1.14	3.27	1.37	4	1.6	4.88	0.91
随波逐流_1	5.5	0.91	3.44	1.47	3.88	2.14	3.04	1.43	2.88	1.51	3.12	1.69	3.12	1.13

Stimuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
离开_1	4.04	1.08	4.88	1.51	5.46	1.73	3.88	1.92	3.35	1.92	2.88	1.53	3.19	1.06
难题_1	4.15	0.83	4.72	1.43	5.35	1.81	4.12	1.86	3.19	1.67	3.62	1.65	3.08	0.8
灵魂_1	5.27	1.28	3.96	1.51	4.54	2.14	3.65	1.94	2.62	1.53	3.12	1.75	3.88	0.82
面颊_1	4.28	1.14	3.2	1.78	4.58	1.86	3.46	1.75	4.81	2.02	2.08	1.61	3.85	0.67
巩固_1	4.42	1.24	3.96	1.51	4.58	2.14	3.19	1.77	3.23	1.5	2.84	1.68	4.08	0.93
颂讚_1	4.88	1.42	3	1.85	4.35	2.08	3.73	2.03	3.04	1.48	3.96	2.01	5.04	0.92
领袖_1	4.31	0.93	3.88	1.74	4.96	2.03	3.6	1.89	4.15	1.85	2.96	1.91	4.54	1.14
头头是道_1	5.31	1.01	3.68	1.75	4.08	2.12	2.92	1.7	2.92	1.44	2.58	1.53	4.04	0.96
骄傲_1	4.04	1.08	4.88	1.45	5.46	1.68	4.15	1.74	3.35	1.55	4.19	1.74	4.19	1.33
惊讶_1	4.12	0.97	4.88	1.54	5.35	1.57	4.19	1.9	3.62	1.86	4.35	2	3.96	1.15
高兴_1	2.85	0.83	5.72	1.06	6.08	1.19	4.77	1.63	4.04	1.97	4.65	1.6	5.12	0.99
松驰_1	4.96	1.18	3.68	1.89	4.58	1.79	3.65	1.83	3.31	1.59	2.85	1.62	3.46	0.99
过失_2	4.5	1.39	4.24	1.56	4.77	1.77	3.42	1.7	3.15	1.52	3.12	1.58	2.88	0.71
仪式_2	4.58	1.1	3.42	1.72	4.15	2.17	3.04	1.82	3.58	1.68	2.08	1.67	3.72	0.79
协会_2	5	1.3	3.48	1.73	4.62	1.92	3.2	1.76	3.69	1.89	1.77	1.07	4	0.57
员工_2	4.92	1.2	4.36	1.78	4.96	1.93	3.96	2.18	3.69	1.81	2.12	1.58	3.81	0.49
喜爱_2	3.62	1.17	5.64	1.19	5.65	1.72	4.72	1.49	3.54	1.68	4.19	1.65	5.08	0.98
报应_2	4.92	1.32	4.24	1.96	4.92	1.7	3.36	1.52	3.24	1.51	3.81	1.72	3.08	0.93
小麦_2	3.92	1.02	2.96	1.88	4.19	2.35	2.58	2.04	5.04	2.09	1.85	1.46	3.88	0.52
工厂_2	3.73	1.15	3.68	1.7	4.46	2.28	2.68	1.55	4.73	1.82	1.88	1.34	3.69	0.62
条件_2	4.31	1.09	4.88	1.67	5.08	2	3.46	2.1	2.46	1.5	2.12	1.21	3.77	0.71
气候_2	4.15	1.16	4.44	1.73	4.88	2.05	3.35	1.92	3.15	1.76	2.15	1.57	3.92	0.69
减少_2	3.58	0.9	5.2	1.41	5.27	1.82	3.65	1.9	3.31	1.78	2.58	1.7	3.31	0.74
争取_2	4.19	1.2	4.92	1.63	5.31	1.76	4.15	1.74	2.62	1.3	3.58	1.65	4.19	1.1
笑声_2	3.5	1.24	5.2	1.12	5.23	1.84	4.65	2.04	4.54	1.84	3.71	1.68	4.92	1.06

Stimuli	AoA		Frequency of use		Familiarity		Self-reference		Imageability		Arousal		Valence	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
细菌_2	4.27	1.25	3.96	1.97	4.81	2.17	3.08	1.66	3.81	1.77	2.73	1.8	3.28	1.24
谋杀_2	5	1.39	3.2	1.78	3.96	2.36	2.04	1.34	3.92	1.9	4.46	1.94	2.31	1.12
财富_2	4.77	1.27	4.4	1.63	5.27	1.61	4.27	1.76	4.15	1.91	3.69	1.98	5.04	1.4
资金_2	5	1.52	4.84	1.43	5.58	1.53	4.12	2.12	3.65	1.87	2.54	1.86	4.38	0.94
开刀_2	4.46	1.14	3.48	1.66	4.38	2.14	2.38	1.36	4.27	2.13	3.62	2.16	2.96	0.96
过失_3	4.54	1.48	4.24	1.59	4.77	1.58	3.08	1.7	3.23	1.48	3.08	1.49	2.81	0.94

APPENDIX F*Intra-rater reliability of the Cantonese and Mandarin groups*

	Cantonese	Mandarin
Age-of-acquisition	0.77	0.72
Frequency of use	0.80	0.80
Familiarity	0.86	0.83
Self-referential rating	0.82	0.70
Imageability	0.81	0.79
Emotional Arousal	0.79	0.72
Emotional Valence	0.83	0.63

APPENDIX G

I. Correlation between Cantonese ratings and English ratings of AoA, familiarity, imageability and emotional arousal

		Cantonese speakers			
		AoA	Familiarity	Imageability	Emotional Arousal
English speakers	AoA	0.39			
	Familiarity		.10		
	Imageability			.41	
	Emotional Arousal				.15

Note: * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

II. Correlation between Mandarin ratings and English ratings of AoA, familiarity, imageability and emotional arousal

		Mandarin speakers			
		AoA	Familiarity	Imageability	Emotional Arousal
English speakers	AoA	.61			
	Familiarity		.59		
	Imageability			.82	
	Emotional Arousal				.69

Note: * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

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